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CEREBRO-SPINAL MENINGITIS.[1]

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I have not yet had time to make a complete analysis of the cases of cerebro-spinal meningitis that have been treated in the Alfred Hospital, but when the epidemic is over, I hope to be able to give a complete report of them. I propose to deal with the general conclusions I have formed, as the result of seeing 193 cases, 115 of which have been directly under my care. With two exceptions, the patients have been males of 14 years or over.

It has been very difficult to obtain any definite information as to the mode of onset, as a large number of the patients were admitted in either a comatose or stuporose condition, and were subsequently confused as to facts. It appears, however, from the histories obtained from a few patients, that there is no fixed mode of onset. The classical form, *i.e.*, sudden headache, vomiting and shivers, with the patient rapidly becoming either comatose, stuporose or maniacal, has been observed in a large number of the cases. On the other hand, a considerable proportion show a much more gradual onset. In these cases the patient complains of feeling off colour for a day or two. He gradually developes a headache, and the other signs of meningitis follow later. Some of these cases have proved to be very severe and more intractable to treatment than many with a more acute onset.

After having seen a large number of cases of the disease, I have become convinced of its varied course and termination. From many points of view it is quite clear that the disease is really a general blood infection, with localization usually in the meninges. In one case the appearance of a typical rash, with involvement of a shoulder joint, vomiting and headache, anticipated the appearance of meningitic signs and symptoms by five days. In other cases, all the typical signs and symptoms have been present. The cerebro-spinal fluid is clear on first puncture. As the disease progresses it becomes turbid, and contains the typical organisms.

As regards its termination, cerebro-spinal meningitis undoubtedly tends to be a self-limited disease, and has a natural tendency to terminate by crisis. In about 50% of the patients seen up to the present who recovered, the fever terminated in this way after about four days, and after a corresponding number of lumbar punctures had been carried out. The greatest number of deaths have occurred early in the disease. Of 72 deaths, 47, or 65%, occurred within four days of admission to hospital; 20, or 27%, occurred within 36 hours of admission.

[1] Read at a meeting of the Victorian Branch of the British Medical Association, on October 6, 1915.

On the other hand, there is a large group of patients who are very ill for four or five days, after which they lapse into a typhoidal state or chronic stage of the disease. In this stage a more or less continuous remitting high temperature is the outstanding feature, and is accompanied by a dry tongue, mental change varying from low muttering delirium to merely a dulling of the intellect, more or less tremulousness, and very great wasting. This wasting is out of all proportion to the fever and length of illness. The patient usually takes nourishment very well.

This condition continues for a variable time, sometimes for three, four or five weeks, and, curiously enough, it also has a distinct tendency to terminate by what resembles a crisis very closely. After the low typhoidal state, associated with a varying temperature, has lasted for some days or weeks, the fever and mental symptoms clear up in about two days, and the patient becomes convalescent within a short time.

The acute cases are, of course, an intense exaggeration of the foregoing condition, with signs and symptoms associated with the early stages of the disease, *e.g.*, headache, vomiting, shivers, rash and herpes.

The early symptoms do not as a rule persist. Vomiting, except at the onset, is relatively uncommon, but is seen again in the later stages, when chronic hydrocephalus may occur. Headache varies a great deal. As a rule, it is very intense at the onset, but it is usually much more amenable to treatment with drugs after lumbar puncture. The outlook is grave in those acute cases where the headache is not relieved by lumbar puncture.

Many of the patients become wildly delirious before admission, but under treatment it is surprising how few of them have to be restrained in bed, and also how few are noisy. As the illness in acute cases progresses, the patients usually sink into a low muttering delirium. But, apart from these cases, many of the patients who are comatose, stuporose or actively delirious on admission, regain their senses shortly after the first lumbar puncture, and from that time appear to be quite normal mentally. Taken as a whole, a feeling of well-being pervades the patients—the worse the man becomes the better he declares that he feels. The man who complains is, as a rule, not very ill.

The rash is a comparatively early symptom. Many of our cases have been admitted with the rash well formed, and in others it has appeared within a few hours of admission. There have been several forms of eruption, and the distribution is full of interest. The commonest form consists of small, petechial and purpuric spots, diffusely scattered over the trunk and extremities. The trunk appears to be the commonest site of eruption. The next situations in order

of frequency are first the lower extremities and then upper extremities. I have only seen two cases in which there was any sign of a rash on the head. The cases were severe, and there was a single purpuric spot on the forehead and on the eyelid respectively. In severe cases, small hæmorrhages may appear under the conjunctivæ. The rash just described varies in intensity from one or two isolated spots to a most profuse eruption. When the eruption is sparse, I have found a very favourite site in the neighbourhood of the hip joint. The rash may develop into hæmorrhagic blisters.

The second form of rash is decidedly interesting, both on account of its nature and distribution. It also appears early, and may or may not be associated with the first form. When it is so associated it is often not very marked until about 24 hours after the first rash has made its appearance.

This rash has an appearance which I can only describe as "hæmorrhagic goose-skin." The skin has the ordinary goose-skin appearance, but, in addition, there is, first of all, a redness of the elevated papillæ, and small hæmorrhages occur into them after a short time. In many cases the blood actually finds its way out on to the surface of the skin, and on clotting forms many small scabs, several of which may coalesce to form a comparatively large one.

The situation of this rash is practically constant. It is only seen on the extensor surfaces of the elbow and upper arm, on the skin over the great trochanters, and on the extensor aspects of the knees. The above order is also that of the frequency with which the eruption occurs.

Associated at times with the "hæmorrhagic goose-skin," but also occurring by itself, is a peculiar hyperæmic flush in the same situations. This flush has at first sight all the characteristics of a pressure mark, but is differentiated from it by several facts. In the first place, it does not disappear on release of pressure; for instance, it is seen in an elbow after the patient had been lying on the opposite side for a considerable time. In the next place, it occurs round the knees and great trochanters, where there has been no pressure whatever.

In the majority of the earlier cases this flush, which I have called the elbow or hip sign, was a very constant feature, and was often to be seen before the rash appeared. Latterly, it has been distinctly less frequent.

The elbow is the commonest site of this flush, while the hip is the next. Even when there is a marked hip sign, it usually does not put in an appearance until a day or two after the elbow sign. The flush seems to indicate a severe type of the disease.

A form of rash occasionally seen is composed of blotchy, erythematous nodules of varying size, that disappear on pressure. I have seen it in several cases, which have at first seemed severe, but which have responded readily to treatment. This rash disappears in a couple of days.

The temperature and pulse vary considerably. In some of the worst cases the temperature was normal throughout. A moderate rise of temperature is the rule. In the chronic cases the temperature may show a very wide swing in the 24 hours. Hyperpyrexia has only been seen in three of our cases. During convalescence, the temperature is very unstable, and may show a rise from trivial causes. A rise of temperature at this stage is commonly associated with a serum rash. This has been very common about 10 days after the commencement of the treatment.

The pulse rate is not of much value in prognosis, except that marked slowing indicates increasing intra-cranial tension. Many convalescents have slow pulses, without any increased intra-cranial pressure.

I will now deal with the meningitic signs. The symptoms, *e.g.*, headache and vomiting, have already been mentioned as being early and, not as a rule, persisting. The important signs are Kernig's and stiffness of the muscles of the neck. The appearance of both these signs coincides with the onset of meningitis, and they are absent in those early cases where there is a general blood infection. The neck stiffness is due to a rigidity of the posterior muscles of the neck, causing a greater or less disability in attempting to flex the head on the chest. This limitation occurs in all grades, and the contraction may become so extreme as to bring about actual head-retraction, which may progress to such an extent as to cause the occiput to rest between the shoulder-blades. This latter condition is usually associated with a varying amount of opisthotonos. Although head retraction is described in the books as being a prominent sign in the disease, it has been relatively uncommon in our cases. It has been quite unusual to find the neck stiffness pulling the head back beyond a straight line with the spine.

Kernig's sign is very constant, and is usually a more sensitive test than neck stiffness, although I have seen one case in which there was marked neck stiffness with only a very slight degree of Kernig's sign. Both signs tend to disappear comparatively early in convalescence; the neck stiffness disappears first. Kernig's sign has a tendency to persist, and is often present to a slight degree after three weeks' convalescence. Some of the patients have been discharged in this condition.

The neurological signs follow some broad general rules. The knee and ankle jerks are exaggerated in the early stages, and often retain this exaggeration throughout. They are usually lost only in fatal cases, as the patients sink into a dull coma.

The superficial abdominal reflexes appear to be of definite value in prognosis. Usually active for the first couple of days, they soon disappear if the condition of the patient gets worse. Their re-appearance is one of the early signs of improvement, and is decidedly encouraging. Many bad cases do not lose these reflexes throughout the whole course of the illness, and this fact is then very helpful in suggesting a favourable prognosis.

The plantar reflexes are mainly flexor in type. The Babinski phenomenon is only observed occasionally, but when it is present is sometimes of much value in clearing up an obscure diagnosis.

The cranial nerves are affected, but not to the extent that might be expected. Optic neuritis is

present in many cases. The auditory nerve does not seem to be very susceptible. I have only seen a single case of deafness. Occasionally, there is a slight unilateral facial paresis.

By far the most frequently affected nerve is the sixth. Paresis of the external rectus, giving rise to a greater or less degree of internal strabismus, is common. These pareses are fortunately transient, and soon clear up in the majority of cases.

The occurrence of herpes is a marked feature. This eruption is met with in a very large percentage of patients who are alive on the third day, and it is to be regarded as a most favourable sign. It is most frequently seen on the lips, and is very profuse, much more so than in pneumonia. It often spreads to the chin, and occurs on the tip of the nose. Another by no means uncommon site is along the course of the cervical nerves.

The affection of joints as a measure of the general infection is not reliable. It seems to occur with equal frequency in mild and severe cases, and does not tend to exercise any unfavourable influence on the course of the disease. Taken as a whole, the joint affections tend to clear up with surprising rapidity.

The diagnosis in the early stages of the disease is, of course, of great importance. It is at times rather difficult, owing to the fact that severe influenza has been so prevalent among the soldiers during the past couple of months. Many patients complaining of headache and sore throat have been sent to us. It is natural to regard any man who complains of headache during an epidemic as a possible case of meningitis, but it is a great mistake to make a diagnosis on this fact alone, as headache appears to be a very real symptom in influenza.

The symptom complex, on which a positive diagnosis can be made, seems to me to be the presence of two at least out of the three cardinal symptoms, *e.g.*, headache, vomiting and shivers, associated with the presence of one or more of the following: An elbow sign, which is very early in appearance, some neck stiffness, or Kernig's sign. In the severe general infection, which at times precedes the onset of meningitis, and in which neck stiffness and Kernig's sign are absent, the presence of a rash and profuse vomiting will settle the diagnosis. But one of the best indications in cases of doubtful diagnosis is the mental condition. The patient may seem a little mixed, will take time to answer questions, and shows a distinct tendency to disorientation. The final diagnosis, of course, lies in lumbar puncture and examination of the cerebro-spinal fluid thus obtained. If the puncture be made early in the disease, apparently clear fluid under increased pressure may be obtained. This, on examination, may not show any cells or organisms, but will most likely give a positive potassium permanganate test, *i.e.*, the reduction of the colour of a 1:1000 solution of pot. permanganate by an equal volume of cerebro-spinal fluid. The usual finding on lumbar puncture is fluid under pressure, showing a variable degree of turbidity, from a mere cloudiness to a degree of turbidity from pus that causes the fluid to become almost solid shortly after it is withdrawn.

The colour of the fluid is of great assistance in gauging the severity of the infection and in giving a prognosis. As a rule, the turbid fluid has a dirty-whitish appearance, but in a number of cases it has a colour varying from pale yellow to a bright canary yellow. I have found these latter cases to be very severe and almost constantly fatal.

The treatment of meningitis has been shown to swing on the use of specific immune serum, but, as you are all aware, it was not until about three weeks ago that a supply of this serum arrived. Consequently, a few words on the treatment we adopted prior to its arrival may be of interest.

Every patient, on admission, was placed, as a routine, on urotropine gr. x. three times a day. This was kept up the whole time the man was in hospital, unless physiological symptoms, *e.g.*, hæmaturia, appeared.

As soon as practicable after admission, lumbar puncture was performed, and as much fluid as could be obtained was allowed to escape. The quantity drawn off varied from about 30 c.cm. up to 115 c.cm., which is, I think, the most I have obtained at one puncture. An amount of normal horse serum, varying from 15 to 25 c.cm. was then injected into the theca. The usual dose was 20 c.cm. This procedure was adopted every day for three or four days, and continued for a longer period when the condition of the patient demanded it. In a number of cases the crisis occurred after the third day of this treatment, and no more punctures were made. Since the antimeningococcal serum arrived the same procedure has been continued, this serum having been substituted for the normal horse serum. In certain cases in which the cerebro-spinal fluid was very thick, I have injected normal saline solution into the theca, and allowed it to flow out again. About 20 to 25 c.cm. of saline solution are injected, and, if necessary, slight suction made with a syringe, in order to irrigate the theca gently. This is done two or three times, and then the serum is injected. The procedure has proved to be of benefit in several instances.

The foregoing is the treatment employed in the acute stages. In the chronic stage, frequent lumbar puncture is often necessary to relieve the hydrocephalus; the injection of serum at this stage may be productive of some beneficial effects at times. Vaccines are of great value during the chronic stage. The vaccine used has been a stock one, prepared by Dr. R. J. Bull, at the University. It is rare to obtain any general reaction following the injection, but in order to get the best effects, the dose should be large enough to produce a definite local reaction. At first, I used doses commencing with 100 million and working up gradually, but since I have employed much larger doses the results have been much more gratifying. As a general rule, I now start with a dose of 500 millions, and after four days I give 1,000 millions. The dose is then in-

creased every four days by 500 millions, until 2,000 or 2,500 millions are given.

In regard to the treatment of special symptoms and complications, pyrexia and delirium often yield promptly to bathing. This is usually carried out in the form a gutter-bath at a temperature of 100° or 101° F. It has been our custom to give such a bath should the temperature rise to 103° or over.

The problem of selecting an appropriate drug treatment for delirium is a difficult one to solve. At times I have given chloral and bromide of potassium combined, in doses of grs. xxx. and grs. xx. respectively, repeated in an hour if necessary. This is sometimes useful in controlling the restlessness and noise.

I have not used morphine, save when other means of quietening the patient have failed. There seems to be a tendency to respiratory failure following its use. In any case when the patient awakens and its effects have worn off he is just as noisy as before. By far the best treatment for delirium and noise is lumbar puncture, the patient often falling asleep after the puncture.

Headache responds in a great many cases to aspirin, but the dose must be liberal; 20 grains, repeated in half an hour if necessary, is the usual dose given.

The commonest complications are hydrocelphalus, internal hydrocephalus, inflamed joints and eye affections, such as conjunctivitis, keratitis and iritis. Simple hydrocephalus occurs during convalescence, and may be accompanied by a rise of temperature. It is treated by simple lumbar puncture.

Internal hydrocephalus is a very fatal complication, and seems to occur most often in patients who had been very ill but have almost overcome the infection and have begun to improve. It may come on slowly or abruptly, and is manifested by gradually increasing dulness and lethargy, dilated pupils, dull, heavy feeling in the head, and perhaps vomiting. Associated with these symptoms, McEwan's sign (*i.e.*, a dull tympany elicited on percussing the parietal region of the skull) is marked. Furthermore, lumbar puncture is not followed by the withdrawal of any large quantity of fluid, and the condition does not improve after the procedure, nor does the McEwan's sign subside. The only treatment for this condition is puncture of the lateral ventricles.

The conjunctivitis, unless it be terminal, responds well to drops of a 10% solution of argyrol. The treatment of the iritis, etc., consists in the frequent application of foments to the eye; atropine drops are required to keep the pupil fully dilated.

I have come to the conclusion that the best treatment for meningococcal joints is to leave them rigidly alone. They tend to clear up very quickly, in two or three days, and leave apparently no subsequent disability. It is not necessary to apply fomentations or to fix them in splints.

I will close with a few words on the end results of treatment. The following figures are approximately correct, and give a summary of the cases treated in the Alfred Hospital since August 11, 1915, to yesterday (October 5, 1915):—

Total number of cases, 193; deaths, 77; convalescents already discharged, 62; remaining in hospital, 54. Of the 54 patients remaining a considerable proportion is convalescent. These figures give a mortality to date of approximately 40%. The number of deaths include several of patients who were admitted moribund. Rumours are current that the patients recovering from meningitis are insane, deaf or blind. Of the 62 patients who have been discharged from the Alfred Hospital, with two possible exceptions, have appeared to be in complete possession of all their faculties. The two referred to appeared to be slightly dull, very similar to patients convalescing after typhoid fever. The only noticeable fault has been a slight stiffness in walking, which soon wears off in practically every instance.

CEREBRO-SPINAL MENINGITIS IN CHILDREN.

By **N. J. Bullen, M.B., Ch.B.,**
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The following notes deal with a consecutive series of fifty-five cases of cerebro-spinal meningitis admitted to the Children's Hospital during the present epidemic, up to September 30, 1915.

The first case, in a patient aged 13 months, admitted on June 12, was a sub-acute type, which gradually passed on to the typical posterior basic variety; the patient ultimately recovered, after a most severe course, lasting sixty days. Since then cases have come in with increasing frequency. Not only is the incidence of the disease increasing, but the disease is becoming steadily more severe, the last six cases being of the fulminant type.

Of this series, 30 were males and 25 females.

Signs, Symptoms and Course.

For the purpose of this paper, I have divided the series into two groups:—

I. Under twelve months of age.
II. Over twelve months.

Group I.—The patients under twelve months, 20 in number, all developed the characteristic features of posterior basic meningitis. The onset was almost always sudden, accompanied by drowsiness and vomiting and in five infants with convulsions. The infants, in the majority of the cases, soon passed into a semi-comatose condition, with rapidly developing rigidity and retraction of the neck. A few of these cases were of the fulminant type, and in two a purpuric rash developed. All the patients suffering from the fulminant type died soon after admission. Bulging of the fontanelle was noted in all cases, and sooner or later an extreme degree of opisthotonus developed. In all but three internal hydrocephalus, with well marked McEwan's sign, was noted. Convulsions occurred during the course of the disease in eight cases, and were usually a bad omen. Hyperæsthesia was frequent. The little patients usually took their nourishment well, though a few seemed to have difficulty in swallowing. Vomiting seldom occurred after the onset. Constipation was a marked feature in all cases. The cerebro-spinal fluid was invariably turbid, and the meningococcus was demonstrated in the greater number. Fever was mod-

erate on admission in the majority, and in all but six the temperature fell to normal within a week.

Group II.—There were 35 patients in this group. The main feature was the extreme variability of the signs and symptoms. The onset was sudden in 28 cases, prodromata of any sort being noted in only three. In these there was a history of sore throat and malaise.

I consider that in nearly all cases in children a prodromal first stage, such as is seen in the adult type, is practically or actually absent. There are two clinical stages only: the septicæmic and meningeal. The former is usually exceedingly short.

The following varieties were noted:—

(1) Fulminant cases, in which the children were suddenly overwhelmed by the invasion, rapidly becoming collapsed and comatose, and usually developing a marked purpuric or petechial rash.

(2) Acute cases, in which the children became steadily worse, with very marked meningeal symptoms, but did not develop a rash or become collapsed. They were often slightly delirious.

(3) Sub-acute cases, in which the patients were never very ill. In these cases the meningeal symptoms were very well marked at times. Recovery was rapid as a rule.

The most constant features of the onset were: vomiting (20), headache (10), and constipation (12). The patients were usually drowsy at the onset. Irritability, photophobia and rigidity and pains in the limbs were noted in several cases.

Convulsions occurred at the onset in five cases, and rigors in four, while coma developed very rapidly in a few.

Delirium developed during the course in about one half of the cases. A few of the children became wildly delirious at intervals, but nearly always answered questions rationally, lapsing again to delirium when undisturbed. The mental condition varied considerably. In some, marked depression persisted throughout, in others, periods of exaltation and depression alternated in an ever-changing succession. This was especially noticeable in some of the chronic cases.

Head retraction, rigidity of the neck, well marked Brudzinski's neck sign and Kernig's sign were present and persistent in nearly all the cases.

Tendon reflexes were absent during the period of collapse, but otherwise were normal.

Tache cérébrale was noted in 19 cases.

Headache was not a marked feature of the course of the disease, except after lumbar puncture. Hyperæsthesia of the skin developed in all chronic cases. None of the children over two years of age were convulsed. Temporary deafness developed in ten cases, whilst otorrhœa appeared in six others.

In a few cases intolerance of light and sound was noted. Strabismus occurred in nine cases, in six being confined to the left eye. Other eye complications were conjunctivitis (10), irido-cyclitis (4), and corneal ulcer (1).

Opisthotonus and rigidity of the most extreme degree were present in fifteen cases.

Most of the children lay curled up on either side, with the head retracted.

Herpes was noted thirteen times, and was very extensive in some, a large portion of the face and scalp being covered. In three, herpes occurred on the fingers.

A purpuric rash was present in sixteen, and a petechial rash in six of the series.

In the fulminant collapsed cases, mottling of the skin was always well marked. In three of these a well marked yellow pigmentation was also present. This was like a weak picric acid stain, and was seen on the face and extremities.

In all the severe cases the mouth was in a filthy condition, the tongue dry and coated and teeth covered with sordes.

No special tendency to the development of bed sores appeared to be present. None occurred in this series.

Small areas of gangrene of the skin sometimes occurred in a well marked purpuric spot.

The temperature curve was in most cases characteristically irregular, with very marked and rapid rises and remissions occurring daily as a rule.

There seems to be no relation between the severity of the disease and the height of the temperature.

The patients never complained of discomfort, nor did they seem affected in any way by a rise to say 105° F., and, conversely, a fall of 7° F. in four hours did not appear to produce any symptoms.

The pulse rate in most cases was relatively slow. It averaged 100-110. The heat was usually somewhat irregular.

Emaciation was noted in 18 cases, and in six was extreme.

Arthritis occurred in four cases, the joints affected being the knees (once), the ankles (twice), and the wrists (once).

The cerebro-spinal fluid was turbid, and always showed polynuclear leucocytosis. In several cases the fluid was extremely thick and flaky. It was usually under increased pressure. The meningococcus was demonstrated in 40 cases.

The appetite was usually good, and at times ravenous.

Vomiting seldom occurred.

The bowels were always constipated throughout.

Incubation Period.

The length of the incubation period is very doubtful. In one case the symptoms appeared to develop 24 hours after a definite exposure, whilst five days seemed to be the period in several others.

In fifteen cases definite contact with soldiers at the various camps was noted. This was the case in seven out of the first eight cases. In ten instances the fathers of the children were in camp. From two of these the meningococcus was isolated in throat swabs. In most cases the men were on sick leave for influenza.

In ten cases more than one case occurred in the same house.

Prognosis.

It is impossible to give more than a general idea of the outlook. The most fulminant case may re-

cover rapidly or after a prolonged and severe illness. On the other hand, a more or less mild case may become steadily worse, and the patient may die in a few days.

In babies under eighteen months the disease is especially fatal. A fatal result appears to be preceded by a failure to withdraw fluid on lumbar puncture. In nearly all these cases the disease is of the posterior basic variety, and dry puncture usually means closure of the foramina of the fourth ventricle, and resultant hydrocephalus. The majority of the patients with hydrocephalus died. It seems reasonable to suppose that Flexner's serum might be most effective in these cases.

In the case of older children, the onset is usually more acute or absolutely fulminant. Many die in the early stage of collapse. When they survive this period, they usually pass into a more or less chronic stage, and then have a good chance of recovery, provided that the cerebro-spinal fluid is removed at frequent intervals.

Treatment.

The prophylaxis consists in the employment of masks and gowns by all attendants. Nasal and throat sprays should be used, the fluid for this purpose being potassium permanganate solution (1:1,000). Vaccination of all attendants should be carried out. The dose should be 50 millions at first injection and 250, 500, and 1,000 millions for the subsequent injections.

The general treatment of cases consists of:—

(*a*) Lumbar Puncture.—I consider this to be the most important part of the treatment. Without it no other method is of any use. Daily or more frequent lumbar puncture is performed in all cases, as long as the pyrexia lasts. The largest number performed in any one case was 48. If obtainable, I think that anti-meningitic serum, or, failing that, a normal horse serum, should be used.

(*b*) Vaccine.—Vaccines have been used in very large doses in the majority of cases, and seem to be effective in the early stages, especially in fulminant and acutely toxic cases.

(*c*) Soamin.—This substance has been used in many cases, in doses varying from gr. ⅓ to gr. ii. on alternate days.

(*d*) Urotropine.—Urotropine has been exhibited in very large doses without any appreciable benefit.

The diet after the acute stage should be liberal, regardless of the height of the temperature.

Results.

The results may be summarized as follows:—

	Recovered.	Died.	Still Under Treatment.
Under 1 year	5	9	6
Over 1 year	13	7	15

It is interesting to note that in the Purdys-Burn series, 11 out of 12 patients under one year died, while out of 128 between one and ten years 95 died. All these patients were treated with Flexner's serum.

THE PATHOLOGY AND BACTERIOLOGY OF EPIDEMIC CEREBRO-SPINAL MENINGITIS.[1]

By **Reginald Webster, M.D.,**
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In outlining a few remarks on the bacteriological and pathological aspects of the current epidemic of cerebro-spinal meningitis, I have borne in mind that you have already had four papers on this subject, and the hour is late. One cannot expect to discuss any of the questions at all comprehensively in the time remaining, but it is hoped that some fruitful suggestions may arise from this necessarily brief paper.

Dr. Bullen has put before you a synopsis of the clinical features of the cases observed at the Children's Hospital. In many of the cases the bacteriological confirmation of the diagnosis has appeared to be scarcely necessary, since the clinical aspect has been so typical. However, laboratory confirmation has been supplied in almost every case. Dr. Bullen mentioned that in 40 cases of his series the meningococcus had been isolated. Of the remaining 15, the meningococcus was isolated *post mortem* in all except one.

In the examination of the cerebro-spinal fluid, reliance has been placed mainly on the cytological and bacteriological findings. Chemical investigation, such as the reaction to litmus, the amount of albumin present, and the power of the fluid to reduce Fehling's solution or otherwise, has not been carried out in every case, owing to pressure of work. In those cases in which these properties have been examined, however. the findings have been fairly constant. The reaction of the fluid has been found to be neutral or alkaline, the albumin and globulin markedly increased, and the property of normal cerebro-spinal fluid of reducing glucose, temporarily in abeyance.

There has been, in the large majority of instances. a gross polynuclear leucocytosis of the cerebro-spinal fluid; indeed, pus has collected in the bottom of the test-tube to the depth of a quarter or even half an inch.

The polynuclear leucocytosis is intimately related to the appearance of turbidity of the fluid. It may be accepted that excess of polynuclears in the fluid invariably produces turbidity; on the other hand. a high degree of lymphocytosis may exist, with clear fluid. This was experienced in one case, in which the first specimen of fluid was quite clear to the naked eye, and contained microscopically an excess of large mononuclear cells, with only a few polymorphs. The child from whom this specimen was obtained showed definite clinical indications of meningitis, and subsequently the lumbar puncture fluid became very turbid, and yielded a growth of meningococci. The first examination was more sug-

[1] Read at a meeting of the Victorian Branch of the British Medical Association, on October 6, 1915.

gestive of tuberculous than meningococcal infection. The instance is worth bearing in mind, as I have been informed of one other case of a similar nature.

Recent writers have attempted to show that the meningococcus is not actually the infective agent, but represents a later, non-infective phase in the life history of the true infective agent, which would appear to be a filter-passing and ultra-microscopic microbe. However that may be, it would not seem to invalidate the diagnostic significance attached to the presence of the classical diplococcus in the cerebro-spinal fluid. Usually, there is no difficulty in demonstrating the characteristic diplococcus. The diplococci are intracellular in the majority of cases, but at times a considerable number of these organisms are extracellular.

The distribution of the organisms in this respect, however, has been found to be dependent largely on the length of time the fluid has been standing before examination. If the specimen has stood for some hours, and especially if incubated, a much larger proportion of organisms will be found outside the leucocytes, an occurrence which may be reasonably attributed to autolysis of the polymorphs.

It is not an uncommon experience to find no organisms in a given specimen of cerebro-spinal fluid. It is by no means unusual to search without success through the deposit from the fluid from a case of two or three weeks' standing; and, occasionally, even in an early case, a careful search will fail to demonstrate the organisms. Such a fluid may still yield a culture of the meningococcus, especially if subjected to a method of enrichment, for which I am indebted to one of the recent articles that have appeared on this subject. The fluid is promptly citrated to prevent coagulation, 3% of glucose is added, and the specimen incubated over night. Cultures may then be obtained on serum agar. I have found that mere incubation of a fluid in which organisms are scare is often conducive to success in obtaining cultures. The high albumin content of the fluid apparently serves as a sufficient pabulum, and multiplication goes on, provided the fluid has not been exposed too long to atmospheric temperatures.

The medium employed for cultural purposes has been serum agar, though not exclusively. *Nasgar*, a nutrose-ascitic agar, has been widely recommended, but, provided proper precautions are taken in the interval between obtaining the specimen and the inoculation of this very sensitive organism on to an artificial medium, ordinary ascitic or pleural fluid agar would appear to be a highly efficient medium. Occasionally, ascitic fluid is not obtainable just when it is required, and a dearth of serum agar ensues.

In such circumstances, I have been in the habit of employing a "glucose-egg" medium, composed of egg (yolk and white), 66%; distilled water, 33%; and glucose added in the proportion of 3 grm. to every 100 c.cm. I have employed this medium a good deal in the examination of contacts, a swab from the naso-pharynx being inoculated directly on to the medium, and no time being lost in placing it in the incubator.

It has been my experience that sub-cultures are more readily accomplished than the primary growth. For instance, I often inoculate a number of ordinary agar tubes for vaccine purposes, and obtain quite vigorous growths, though they generally take about 48 hours to appear. In a few instances, primary cultures have been obtained on ordinary peptone agar, but never a luxuriant growth. Sub-cultures have also been readily obtained on blood-smeared agar, inspissated blood serum, and in peptone broth.

With regard to the characteristics of the organism isolated, so far as I have been able to determine, its morphological appearances have conformed almost uniformly to the meningococcus of Weichselbaum. The phrase "almost uniformly" is used because several variations have been observed in the microscopical appearances of the organism isolated. For instance, I was led to return what later transpired to be an erroneous report, by a decidedly close resemblance of this organism to the pneumococcus. During the present epidemic, all our cases presenting turbid fluid have been tentatively regarded as meningococcal, until laboratory confirmation has been received. However, among the turbid fluids sent to the laboratory at the Children's Hospital, four have proved undoubtedly to be pneumococcal. In one, an unusually acute tuberculous specimen there was a sufficient polynuclear element to produce turbidity in the fluid. The case I have referred to showed definite diplococcal forms, surrounded by a capsule, not predominantly intracellular, and feebly Gram-positive. I reported that the case was probably of pneumococcal origin, but a subsequent specimen revealed typical meningococcal forms, Gram-negative, intracellular, and yielding a typical growth of meningococci. I am at a loss to account for the varying reaction to Gram's staining method, as the usual precautions of using fresh stain, and accurate timing, were observed.

Pseudo-capsules are not uncommonly observed, especially in a highly albuminous medium, and this may account for the appearance of a capsule. Having regard to the pleomorphism frequently exhibited by the meningococcus, I am inclined to regard this experience as an instance of this phenomenon.

What is probably another instance was observed in the case of a specimen yielding, in addition to typical meningococcal forms, short, Gram-negative, influenza-like bacilli. The mother of the child from whom this specimen was taken died of cerebro-spinal meningitis in the Melbourne Hospital, and cultures from the specimen under consideration yielded a characteristic growth of meningococcus.

In investigating the fermentative reactions of the organisms isolated, it has been my experience that while glucose is readily fermentable, the reaction with maltose is not so easily obtained. Indeed, most of the maltose fermentation tests have been negative in regard to acid production, even after periods of a fortnight and longer. It would therefore appear that the organism recoverable from the present series of cases differs from the text-book meningococcus in not fermenting maltose.

These considerations of fermentative reactions bring us to the question of examination of contacts, and the detection of carriers of this disease. The difficulties surrounding this procedure are very great, if scientific accuracy is to be attained. A swab from the naso-pharynx yields a very mixed growth of organisms, and it is a common experience to obtain pneumococci, streptococci, Gram-negative bacilli (possibly *b. influenzae*) and Gram-negative cocci. It is with the last mentioned that we are mainly concerned. Gram-negative diplococci are commonly encountered in the cultures, and microscopically are indistinguishable from meningococci. It therefore becomes necessary to isolate the Gram-negative organisms in pure culture, a procedure involving a considerable expenditure of culture material, and to investigate their fermentative reactions. The organism most closely simulating the meningococcus, the *micrococcus catarrhalis*, ferments neither maltose nor glucose. Another distinctive feature is the peculiar cohesiveness of the colonies. The individual colony is lifted off *en masse* on the platinum loop, and it is difficult to break it up in making a smear.

The shortest time in which a conclusive result of an examination of the naso-pharyngeal mucus can be arrived at is four or five days. It is therefore obvious that if a large number of contacts is to be investigated, the amount of work involved will be very great; the control becomes impracticable unless a considerable staff is engaged.

In giving some assistance to Dr. Bull in the examination of military contacts, the procedure has been to take direct smears from the posterior nares and the throat, and to report according to the presence or absence of Gram-negative diplococci. No doubt the cultural isolation of the organisms is preferable, but as indicated above, is impracticable with limited assistance. During the early stages of the epidemic, I made a practice of examining the naso-pharyngeal secretion from any soldiers with whom the child had been in close contact. Ten soldiers were subjected to this investigation, but only from two was I able to isolate organisms giving all the requisite reactions. From three others a Gram-negative diplococcus was obtained, which fermented glucose, but not maltose. Further investigation of carriers was rendered impracticable by the large amount of work in other directions.

Post-mortem work has afforded an opportunity for some interesting observations. In the fulminant type, lesions have been remarkably few.

This class of case presents the appearances usually encountered in a septicæmia from any source, *e.g.*, enlarged spleen, petechial extravasations under the serous membranes, cloudy swelling of the organs when examined microscopically. No meningitis was discovered *post mortem* in three cases. These were all fulminant cases, two with a hæmorrhagic rash, the other without a guide to the diagnosis. All the patients died within 29 hours. The first of these cases impressed us very much. The child was admitted *in extremis*, with no indication of any particular infection or system disease, and died an hour or so after admission.

At the post-mortem examination the cause of death at first seemed to be obscure. There was no meningitis, not even œdema of the leptomeninges, and little indication of morbid change was found in any of the organs. Cultures were taken on serum agar from the spleen and the lungs, and some of the cerebro-spinal fluid was collected. From all these sources cultures of the meningococcus were obtained, and the cerebro-spinal fluid showed a definite, though slight, polynuclear leucocytosis, with a proportion of mono-nuclear cells. In one of the other cases there was what may be regarded as incipient meningitis, *viz.*, œdema of the pia-arachnoid and injection of the cortical vessels.

These three cases afford instances of death in the septicæmic stage, and before the disease was entitled to its ominous designation, meningitis. In order to overcome the objection that this form of meningococcal invasion of the blood stream may have been a *post mortem* occurrence, I made a culture from the blood during life in a case that appeared to be suitable. This was two days ago. The culture was made in broth, and a sub-culture on serum agar. I have brought these cultures with me to show you. You will see that there is a very typical growth of meningococcus.

The organism has also been successfully isolated from one case of suppurative arthritis, which has occurred during the present series. Many observers have obtained cultures from the urine in acute cases; I have not made any observations on the bacteriology of the urine in the present series.

The common *post mortem* finding in the case of patients who die after several weeks' illness is as follows: As a rule, no purulent exudate is found on the convexity of the cerebrum, which is to all naked eye appearances free from pathological changes. The same applies to the under surface of the frontal lobes. The mischief is encountered in the middle and posterior fossæ, where a quantity of purulent exudate surrounds the structures in the interpeduncular space, extending ventrally over the pons and medulla, into the spinal canal. Dorsally, the exudate extends over the roof of the fourth ventricle and the under surface of the cerebellum. In the more chronic cases in children it has been our experience to find this form of basal meningitis. There is nearly always pronounced dilatation of the fourth ventricle, Sylvian aqueduct, and third ventricle, with a greater or less degree of hydrocephalus. The middle ear chambers are examined, as a rule, and in most cases purulent fluid has been discovered. This, however, is such a common occurrence in children at *post mortem* examination that hesitation is felt before much significance is attached to it. Examination of the ethmoidal and frontal sinuses has not revealed any conclusive evidence of a direct spread of infection from the nasal mucus membrane to the basal meninges.

It would appear from those cases in which death has occurred without actual meningitis, but in which the organisms have been recovered from the blood,

that the pathogeny of the disease consists in an invasion of the blood stream with meningococci, with subsequent localization in the site of election, the meninges. This is true at any rate of those cases which pass beyond the catarrhal or prodromal stage.

Reviews.

PATHOLOGY.

The Students' Aid Series comprises some three dozen small volumes, which can be purchased for sums varying from 1s. to 4s. 6d. It is understood that these booklets are not intended to replace the full-sized text-books; they are rather written and published with a view of enabling students to commit to memory facts on which they may be examined. While the object may not meet with approval, since it savours of a desire to stimulate cramming for examinations, the books might be of value. A short statement is often better than a long one, provided that the essential arguments are brought forward lucidly and accurately. Some numbers of the series are good, others are less so; others again cannot be recommended at all. "Aids to Pathology"[1] contains some good material and some statements which are unreliable. In parts, the treatment of the various subjects is excellent; in parts it is weak.

The book may be treated as though it were composed of two parts. In the first the author describes general pathology, while in the second he turns his attention to the pathology of special diseases or diseases of special systems. The chapter on hæmatology is unsatisfactory. While the greater part of the information contained is reliable, it appears to us that the student will be confused rather than instructed, and will not carry away with him a clear idea of the pathology of the more important blood diseases. The author might save the space devoted to the normal blood pictures, since this will be learned as part of physiology. This gained space should be devoted to a better elaboration of the changes occurring in pathological states of the blood. The chapter on immunity contains much to which exception can be taken. It is not usually accepted that endotoxins are produced by the bacteria. Various attempts have been made to explain what is meant by an endotoxin; the most plausible being that it is nothing more or less than the globulin fraction of the protein of the cell body liberated after disintegration. The description of the antibodies is wanting in crispness, and many of the views expressed as probably incorrect. For example, in the description of phagocytosis and opsonic action, the author assumes that a bacterium ingested by a leucocyte necessarily dies. It has been demonstrated that further development of a bacterium may take place within the leucocyte under certain circumstances. He is guarded in the expression of opinion in dealing with opsonins, and relies largely on the claims of Wright. But when he comes to the question of the opsonic index, about which so much dispute has arisen, he is satisfied to state the case as if it were generally agreed that this yields an accurate measurement of the power of the leucocytes to protect the body in cases of infection. On the other hand, the paragraph on antitoxins might contain more definite statements. Under the heading anaphylaxis the statement is made that the reacting dose must be introduced by the same channel as the sensitizing dose. Every worker on anaphylaxis has sensitized guinea-pigs by subcutaneous injection, and has tested the condition by various routes with positive results. Under the heading of vaccines, the classical experiments of Besredka on sensitized bacteria are ignored, and the author indulges in an account of the utility of anti-typhoid vaccine, instead of teaching what is known of the mechanism of vaccine therapy. Moreover, no mention is made of recent work on the anomalies of dosage of vaccines, which tends to throw some light on the subject.

The pathology of diseases of the heart is carefully and excellently given, and the description of tumours is good. Similarly, many of the chapters in the second part of the work are brief but satisfactory accounts of the modern teaching of the various subjects dealt with. But even in this part the author tends to be unconvincing at times, and much of his matter loses because of the want of a happy selection of concise statements. On the whole, the book cannot be recommended to students or medical practitioners.

[1] Aids to Pathology, by Harry Campbell, M.D., B.S. (Lond.), F.R.C.P.; Third Edition, 1915. London: Baillière, Tindall & Cox; Crown 8vo., pp. 228, with illustrations. Price, 3s. 6d.

TROPICAL MEDICINE.

Dr. Brooke's contribution to the "Students' Aids Series"[2] has reached its second edition, the first having appeared in 1908. This little work should prove of great value to practitioners in tropical districts and to students intending to practise in the tropics. The material is arranged in alphabetical sequence, and each subject receives brief but skilled treatment. The new edition contains chapters on three-day fever, verruca peruana, snake-bite, disinfectants, fleas, flies, mosquitoes and rats, in addition to the chapters contained in the original edition. The biological subjects are sufficiently full for reference purposes, and information of distinct value is included in the descriptions. The author has succeeded in selecting just those important points in connexion with each disease and other subjects that give the clue to the situation, and by utilizing short sentences and introducing numerous tables, he has presented a digest of tropical medicine which is excellent in every respect. This is one of the good volumes of the "Students' Aids Series."

Notes on Books.

Four little vest-pocket books of approximately the same size, and all dealing with closely-allied subjects, may be dealt with together. These books differ greatly, not only in regard to the subject matter, but also in regard to their utility. The first[3] may be roundly condemned as an unjustifiable publication. It consists of a series of prescriptions, which are intended to teach the student the art of prescribing. In reality, these prescriptions would have the opposite effect. The man who employed these formulæ would deprive his patients of the valuable part of medical treatment, namely, the attempt to individualize, and to treat the patient and not the disease.

The second takes the form of posological tables,[4] and consists in posology pure and simple, a list of the important alterations of the British Pharmacopœia of 1914, a poison table, and lastly an index of diseases, with their more important remedies. The posological tables may be found of use, as may the second and third divisions, but the habit of setting up a list of diseases and adding to this list a second list of drugs which may be used as "remedies" should be condemned most strongly.

The third is an index to pharmacy,[5] and as such appears to be reliable. The first few pages are devoted to the alterations contained in the new edition of the British Pharmacopœia. Following this is a list of official and non-official preparations and chemicals in use in the treatment of disease, with the dosage of each. The arrangement is convenient for those who desire to carry with them a list of substances which may be employed.

The last of the quartet is a valuable little book.[6] It represents an excellent digest of the new and more important features of the British Pharmacopœia of 1914, com-

[2] Aids to Tropical Medicine, by Gilbert E. Brooke, M.A., (Cantab.), L.R.C.P. (Edin.), D.P.H., F.R.G.S.; 1915. London: Baillière, Tindall & Cox; pp. 230, Second Edition; Crown 8vo. Price, 3s. 6d.

[3] Husband's Students' Pocket Prescriber and Guide to Prescription Writing, Revised in Accordance with the British Pharmacopœia, 1914, by David Mitchell Macdonald, M.D., Fifth Edition, 1915. Edinburgh: E. & S. Livingstone, pocket size, pp. 152.

[4] Posological Tables, Appendix on Poisons, Index of Diseases and Medicines. Arranged According to Their Action, by William Craig, M.D., C.M., F.R.S.E., F.R.C.S. (Edin.); Fourth Edition, 1915. Edinburgh: E. & S. Livingstone, pocket size, pp. 132. Price

[5] Prescribers' Formulary and Index of Pharmacy, Adapted to the 1914 Pharmacopœia, by Thomas Pugh Beddoes, M.B., B.C. (Cantab.), F.R.S.C.; Second Edition, 1915. London: Baillière, Tindall & Cox; pocket size, pp. 132. Price,

[6] A Digest of the New and More Important Features of the British Pharmacopœia, 1914. Compiled for a Conference, by Sidney Plowman, F.I.C.S. (Eng.), and A. R. Bailey, Ph.C., 1915. Melbourne: Government Printer; pocket size, pp. 64.

piled under the direction of a conference held in Melbourne on February 24, 1915, to which the representatives of the Health Department, the members of the Medical Board, the Vice-Presidents of the Victorian Branch of the British Medical Association, and the Officials of the Pharmacy Board of Victoria were invited. A copy of this digest has been sent to every practitioner in Victoria, and we are convinced that it will be found of marked use to each one. Incidentally, the practitioners of Victoria are asked to adopt the metric system in writing prescriptions.

LIVERPOOL CAMP ENQUIRY.

Continued from page 429.

Housing Accommodation.

In the course of Mr. Orchard's speech, attention was drawn to the defective construction of huts, and the consequent effect on the health of the troops. His Honour arrives at the conclusion that these charges are justifiable to some extent. He describes the huts as draughty, and attributes what he terms "serious colds" to the draughts. Perhaps the most important evidence given in connexion with this matter was that of Dr. William George Armstrong. He pointed out that there was no ridge pole ventilator in the huts. There was an aperture between the wall and the roof, and there were spaces between each corrugation of the galvanized iron and the flooring. The result of these openings was a constant current of air between the floor and the roof during the hot weather. In cold weather the ventilator openings should be closeable, but in summer it was impossible to get too much air. Later on he again referred to the same subject, and stated that he would like to see the open space along the wall plates of this kind of hut cut down very much. The fall of the roof was so small that it would be very difficult to put in a ceiling. It could be put in. He also expressed the opinion that he would not like to see the openings between the walls and the roof closed up altogether. He objected strongly to a hermetically sealed type of hut. In reply to a question whether he would be surprised to learn that moisture always collected underneath the roof iron in a hut in which 80 to 100 men were sleeping, and that it was of sufficient quantity to fall in drops on to the bed, he stated that this always occurred in buildings with an iron roof. The moisture was derived partly from the air, and partly from the breath of the men in the room. He was asked whether this could have any deleterious effect on the health of men, especially those suffering from chest complaints. He stated that it could not be good for them to have water dropping on to their beds. This would be obviated if the fall of the roof were increased, or if the huts were lined.

In the recommendations his Honour quotes at length the advice given by Mr. Ernest Scott in regard to the open type of hut. There is no doubt that the proposed alterations would be very beneficial, and the suggestions made by his Honour in regard to the removal of dust and dirt are excellent.

In one respect it would appear that too much importance was attributed to the draught. It is extremely doubtful whether the infective catarrhs which have been and still are prevalent at Liverpool are materially influenced by this factor. On the other hand it is obvious that in a comparatively small space containing 80 to 100 men, any form of infection will become widespread.

Kitchen Accommodation, etc.

Section C (2) of the report deals with the storage of bread in huts, the kitchen accommodation, the distribution of food, and the cleansing of eating utensils.

Section 8 of the recommendations deals with the same subjects. There is little to be said on this subject. His Honour remarks that the method of cleaning the dixies and eating utensils in vogue may have been one of the chief causes of illness in the camp. He has satisfied himself that the sand used for this purpose "must, in many cases, have been impregnated with urine and expectoration." It is impossible to judge the value of the evidence given on this score by its perusal. His Honour was in a position, and is competent to weigh the evidence, and to measure its reliability, and for this reason it would be rash were we to express an opinion. If this constituted a frequent practice, namely, that eating utensils were cleaned with sand soiled by excretions, no condemnation could be severe enough. The danger of such a practice would be real, and it would be highly objectionable, apart from any danger. We can only hope that it was comparatively rare.

Miscellaneous.

Section D deals with the preferential treatment in the German concentration camp. This matter has no medical significance. Similarly the subjects dealt with in Section E, headed "Miscellaneous," do not concern either the public health or the medical aspects of the camp.

Centralization.

Mr. Orchard attributed the mal-administration of the camp to excessive centralization. This matter has been dealt with in the previous articles on the report. His Honour points out that Dr. Schlink had stated in evidence that it took him a month to get financial authority to erect a shelter shed for the sick men on parade, and quotes other instances of delay due to the necessity of applying to headquarters for everything. It is outside our province to enter into a discussion of the administration of the camp, save in so far as this administration affects the health of the troops and the efficiency of the Army Medical Camp. His Honour has made a number of suggestions under recommendation No. 1, dealing with administration, many of which have an indirect bearing on the question of centralization or decentralization.

General.

The last section of his Honour's report is headed "General," and contains only two matters of medical importance. The first concerns itself with the very serious discrepancy between the numbers of men passing the doctors' test at the barracks, and that of the men actually enlisting. This is a matter of administration with which the Medical Department should have nothing to do. For the sake of the men joining, and of their relatives it would, however, be advisable if means were adopted to ensure that a proper record is kept of the work carried out by the medical officers in examining recruits.

The second point is also one which only concerns medical officers indirectly. His Honour deals with the necessity of training and hardening the men by means of plenty of exercise and good food in order that they may take the field fit and well. He considers that "the Spartan-like method of exposing soft recruits to unnecessary privations and hardships is not only cruel, but is calculated to endanger their lives."

It is difficult in places to follow the reasoning in the various chapters of the report. In certain places it would appear as if the whole story had not been told. This impression is increased when the report is compared with the evidence. We have endeavoured, without success, to ascertain whether the report constitutes the whole document which was handed to the Minister. Moreover, while his Honour has interpreted the reference of the Commission quite literally in regard to the exclusion of the subject of the site of the camp, he has been less exact in other directions, and has exercised a certain amount of discretion.

THE SCHLINK FUND.

We have received the following subscriptions to the Schlink Fund during the last week. The amount now stands at approximately one-third of the total of the bill of costs.

	£	s.	d.
Amount previously acknowledged	91	16	0
Dr. G. C. Byrne	2	2	0
„ R. A. Parker	5	5	0
Total	£99	3	0

The Medical Journal of Australia.

SATURDAY, NOVEMBER 6, 1915.

Cramming and Fatigue.

Among the many books placed on the market for the ostensible purpose of advancing the work of students, not a few will be found to favour the system of learning generally spoken of as cramming. Since a test of efficiency and of knowledge is regarded as necessary for the purpose of controlling the education of all students, it is essential in the vast majority of cases for school children and university students to commit a great deal to memory for the direct purpose of passing the test. A comprehensive curriculum means a large quantity of facts to be stored up in the memory, at all events until the time of the examination, and the shorter the time of preparation, the greater will be the necessity of retaining doctrines by means of stereotype sentences. In the case of school children, the system is deplorable and objectionable. A skilled teacher should be able to measure the progress of his or her pupils without recourse to any examination, and the preparation for the school leaving examinations should be conducted without imposing that strain on the young which is the inevitable consequence of cramming. In the case of the university student, it is doubtful whether any of the suggested alternatives for the existing methods have not even more serious drawbacks and defects. The recent temporary expedient of speeding up the courses for medical students at the various universities within the Commonwealth for the immediate purposes of war must of necessity entail an increased amount of cramming and of consequent fatigue.

Mental fatigue, caused by an overtaxing of the powers of the scholar or student, must produce a deleterious effect on efficiency, and should therefore be reduced as far as is possible, both in the immediate interests of the individual and in the ultimate interests of the community. The study of the physiology of fatigue may assist in limiting its baneful effects. From a physiological point of view, a difficulty has arisen from the first, on account of the impossibility of determining a standard unit. Moreover, since fatigue follows an output of energy and is dependent on the resistance to be overcome, it will be seen that the basis of fatigue is too complex to admit of a direct measurement of its causes. Mott attributed the occurrence of fatigue to an increase of resistance in the higher levels of the central nervous system, where the neurons are more or less dissociated and little fixed. During the condition of fatigue, the waste products of metabolism accumulate, and indirectly increase the resistance.

In the next place, fatigue is frequently opposed by mental stimulation and by emotions, impulses and other psychial qualities, and it must not be forgotten that concentration appears to have a directing influence over the expenditure of energy, preventing, as it were, leakage in undesired channels. Consequently, it becomes impossible to measure fatigue as energy can be measured, and all the tests applied can only indicate within wide limits the general effect on the body and its functions of fatigue. The tests which have been introduced, both for experimental and for practical purposes, are either physiological or psychical or psychophysical. It is not possible to describe in this place the various tests which have been applied for the purpose of ascertaining the general effects of fatigue, but it may be stated that the result of the work carried out tends to demonstrate that the measurement of the tiring of a given set of muscles may be regarded as the indication of the effects of over-exertion and of consequent fatigue. By means of the ergograph, both attention and muscular energy can be recorded graphically. It has been held that attention is a motor phenomenon, and, consequently, that it should be measured together with the muscular power. Mosso's original ergograph certainly appeared to record even slight degrees of tiring. McDougall's modification is more sensitive, and is probably the most accurate means of registering voluntary attention and fatigue. For practical purposes, in schools or universities, however, these instruments are unsuitable. There is

another instrument, small almost to insignificance, which does not appear to have attracted the attention it deserves. This is the Bishop Harman instrument for applying the diaphragm test. The test was devised for the demonstration and measurement of capacity of binocular vision. According to Bishop Harman, the measurement of the oculopoise, or balance of distinct binocular vision when the object viewed is placed beyond a screen of varying width and monocular vision, which he terms single-eyed cross vision, may be used as a means for making fatigue tests in school children. It has been shown that if a child or student is tested in this manner under normal condition when free from over-exertion, a definite index of binocular vision will be obtained. This does not vary, save when health is disturbed or when the individual is fatigued. Slight degrees of tiring can be determined by a corresponding loss of capacity for binocular vision. If this simple test were applied to school children and medical students, a timely warning would be given when continued work under pressure would probably be unproductive and disadvantageous.

WISEACRES AT WORK.

Whenever the Ministry in Great Britain finds it advisable to humour a small but noisy party of agitators, a Royal Commission is appointed to enquire into the subject at hand and to report thereon. The cumbrous machinery of the Royal Commission can always be relied on to move so slowly that by the time the Commission has completed its work and published its report the agitation has died of inanition. In Victoria, the legislators would have done better had they emulated this example in regard to the anti-vaccination agitation. Instead of this, a Select Committee was appointed for the purpose, and this Committee has now issued its report. We have referred from time to time to the value of the evidence offered before this Committee. The attitude of the medical profession as a whole is so definite in regard to Jennerian vaccination that it is scarcely necessary to adduce arguments in its favour. The members of the Select Committee have earned for themselves a reputation of being bold and fearless, even if they cannot claim to be expert on the subject with which they have been concerned for some months. It may be necessary at a later date to analyse the report in some detail. At present, only the main and violent recommendations need receive treatment. The recommendation to which we refer are that of the introduction into the Victorian law of the conscientious objection clause, which has robbed the British Act of its value, and that of the prohibition of vaccination of children under the age of two years, save when an epidemic exists.

In the year 1902 the Council of the British Medical Association in London issued a pamphlet entitled "Facts About Small-pox and Vaccination, and the Lesson of a Hundred Years of Vaccination in Europe, 1796-1896." The Council set up thirteen theses, and brought convincing proof for the truth of each. It was shown that the mortality from variola was much less at the time of publication than in the prevaccination times. In the next place, it was demonstrated that the greatest diminution in the small-pox mortality was found in the early years of life, in which there was most vaccination. They showed that in countries where there was much vaccination and revaccination, relatively to the population, there was little small-pox, and that in classes among which there was much vaccination and revaccination, there was little small-pox. The fifth proposition is that where small-pox prevailed, the attacks were more frequent among the unvaccinated than among the vaccinated, especially when the vaccinations were comparatively recent. In the sixth, evidence is adduced of the same fact in regard to houses containing both vaccinated and unvaccinated persons. Next, it is proved that the fatality rate among the unvaccinated was much greater than among the vaccinated. The eighth proposition is that it could not be truthfully alleged that, independently of vaccination, small-pox was a milder disease than in former centuries. It was further shown that the protection varied with the number and size of the marks. The tenth statement is that sanitation could not account for the facts set out, while the eleventh is that although isolation of small-pox patients in hospitals was a useful auxiliary to vaccination, it was no substitute for it. Then follows the sentence written large:

Vaccination is very safe! This has been demonstrated in the face of challenges times without number. The last point is exclusively local, and is that calf-lymph was available for the vaccination of every child in the country.

It may be assumed that the case for vaccination is a good one in the opinion of those qualified to judge, namely, the members of the medical profession. The statistical and other evidence on which these statements were based is quite conclusive, and would certainly satisfy any intelligent legislator who was prepared to accept facts.

The members of the Select Committee point out that Victoria and Ireland are the only two English-speaking countries in which vaccination is carried out as a compulsory measure. And yet the Committee feels justified in recommending that the compulsion shall give way to a clumsy form of voluntary vaccination, or, rather, submission to vaccination. More than that, instead of being proud of the fact that Victorian legislators have given evidence of their superior intelligence by the introduction of an adequate safeguard against a dangerous scourge, the Committee is willing to pander to the wishes of the ignorant and biassed, and to render vaccination during the first two years of life illegal, save when an epidemic is present. The logic of the exception is not very apparent. The quintet has discharged its obligation to the minority, and we presume that the wisdom of the majority will prevail in the future as heretofore.

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NURSING ETHICS.

Dr. T. Percy C. Kirkpatrick has delivered a charming lecture to the past and present nurses of Dr. Stevens' Hospital in Dublin on "Nursing Ethics."[1] The subject is dealt with in a dignified, masterly manner, and the lesson should be extended to all nurses in the British Empire. The term ethics has gradually assumed a meaning which its derivation does not quite justify. The Greek word *ethos* signifies the doctrine of right and wrong, and, consequently, the application of the term to the rules which should govern professional behaviour is somewhat foreign. But we have become accustomed to speak of medical ethics and nursing ethics, and, for convenience, may retain these expressions. Primarily, both are required for the purpose of enhancing the value of the assistance rendered to patients. Consequently, when a question arises as to the correct method of carrying out professional work, it is quite safe to follow the line which is obviously to the greatest advantage of the patients. A complete code of medical ethics has yet to be drawn up. General principles have been adopted among British practitioners, and it is highly desirable for close uniformity to be introduced into every State in the Commonwealth and into every part of the British Empire in regard to details. But while the rules governing the professional conduct of medical practitioners are being drawn up and insisted on by the British Medical Association, less emphasis is placed on the observance of the essential rules governing the conduct of nurses. This subject should be handled by the nursing associations in the first place, but the medical practitioner will benefit his patients if he pays especial attention to the unwritten laws which affect the relations of practitioner, nurse and patient. For this reason, we can recommend practitioners to procure this brochure and to lend it to those nurses who act with him. Dr. Kirkpatrick deals with the correct behaviour of the nurse in hospital and in private. He stimulates her sense of duty and loyalty to the institution in which she is privileged to work, and guides her to help her patients to bear the load of sickness. He delivers a gentle and wholesome lesson on tactful behaviour, and his warning in regard to indiscreet speech, both within the hearing of the patients and outside, is admirable. After having dealt with the general principles of nursing ethics, and touched lightly on some points of special importance, he concludes by saying: Let each one bring to her work, and to the solution of its problems, a spirit of sympathy, of loyalty, and of thoroughness; let each remember what she owes to herself, to others and to her profession, and she will find that most of these problems will solve themselves.

[1] Nursing Ethics: A Lecture, by T. Percy C. Kirkpatrick, M.D., 1915. Dublin: Ponsonby & Gibbs. Price, 1s.

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AN IRRESISTIBLE APPEAL.

Every Victorian knows the Order of the Sisters of Charity and their wonderful work in tending to the sick. Melbourne has every reason to be proud of the stately hospital called St. Vincent's and of the way in which this institution is managed by the Mother Rectress. These things need no advertisement. A hundred years have now passed since the Sisters of this pious Order first undertook the care of the sick poor, and three times seven years have elapsed since the Hospital has been placed at the disposal of all who seek its hospitable shelter during sickness. None are turned away when room can be found, but it is unfortunately not rare that the number of applicants for admission is far in excess of the number of vacant beds. The Mother Rectress has announced her intention of asking the charitable public to assist her in erecting a lasting and at the same time purposeful memorial of the century of charitable work. The form she proposes is the best that can be devised. It is to complete the building and thus to increase the accommodation by the addition of 150 beds. In the past, the expenditure has exceeded the income by

a goodly sum; the management has a serious indebtedness to the bank. The anxious burden of debt has been lifted a little from time to time by the generosity of benefactors. She now looks for further assistance to render the self-imposed task of the Sisters one of increased utility to the community, by reason of its extension and by the removal of the drag caused by a depleted treasury. The appeal is supported by the members of the indoor medical and surgical staff of the Hospital. Need we say more? We are convinced that the rich and those in comparative luxury will listen to an appeal of this kind and give freely to the lasting memorial of one hundred years of work of unsurpassed charity.

Naval and Military.

We have received information from Lemnos of the illness of a considerable number of medical officers serving in the A.A.M.C. at Lemnos and elsewhere. Major W. Kent Hughes has been ill, and is at present at the Base Hospital. Lieutenant-Colonel Stawell has had a sharp attack of amœbic dysentery, but is, we are pleased to state, recovering rapidly. Major Clarence Read has also had a mild attack of dysentery. Major Upjohn was in hospital for two days toward the end of September with febrile symptoms, which raised the question of enteric fever for a time. He recovered, however, within a short time, and returned to duty. Captain Leary was also ill in hospital.

In the casualty lists published on October 26, 1915, Captain J. Macdonald is reported to be seriously ill. In the lists (99th and 100th) published on October 30, 1915, the following are reported as ill in hospital in Bristol: Captain A. J. Dunn, First Australian General Hospital; in Third General Hospital, London, Major L. W. Dunlop, 1st Field Ambulance; in General Hospital, Gibraltar, Major A. L. Dawson, 4th Field Ambulance, and Captain A. C. Nott.

The following appointments have been gazetted on October 28, 1915:—

1st Military District.

Australian Army Medical Corps—

Temporary Major A. M. McIntosh to be Temporary Lieutenant-Colonel whilst holding appointment as Principal Medical Officer, with pay at rate of £650 per annum. Dated 27th July 1915. (This cancels the notification respecting salary of Principal Medical Officer, 1st Military District, which appeared in *Commonwealth of Australia Gazette*, No. 67, of 3rd July, 1915.)

Captain L. P. Winterbotham to be Staff Officer for Invalids, with temporary rank and pay of Major, at rate prescribed by Universal Training Regulation 160. Dated 27th July, 1915.

Captain G. A. C. Douglas to be Senior Medical Officer, Australian Imperial Force Camp, with temporary rank and pay of Major, at the rate prescribed by Universal Training Regulation 160. Dated 10th September, 1915.

2nd Military District.

Australian Army Medical Corps—

Captain C. H. K. Lawes to be Senior Medical Officer, Australian Imperial Force Camps, with temporary rank and pay of Major, at the rate prescribed by Universal Training Regulation 160. Dated 13th July, 1915.

3rd Military District.

Australian Army Medical Corps—

Captain H. Grover to be Adjutant, with temporary rank and pay of Major, at the rate prescribed by Universal Training Regulation 160. Dated 21st July, 1915. (This cancels the notification respecting this Officer which appeared in *Commonwealth of Australia Gazette*, No. 92, of 14th August, 1915.)

4th Military District.

Australian Army Medical Corps—

Honorary Major R. S. Rogers is transferred from Australian Army Medical Corps Reserve, and to be Officer Commanding 7th Australian General Hospital and Staff Officer for Invalids, with temporary rank and pay of Lieutenant-Colonel, at the rate prescribed by Universal Training Regulation 160. Dated 31st July, 1915. (This cancels the notification respecting this Officer which appeared in *Commonwealth of Australia Gazette*, No. 106, of 9th September, 1915.)

5th Military District.

Australian Army Medical Corps—

Major A. E. Randell to be Temporary Lieutenant-Colonel whilst holding appointment as Principal Medical Officer, with pay as for rank of Major, at the rate prescribed by Universal Training Regulation 160. Dated 1st September, 1915. (This cancels the notification respecting salary of Principal Medical Officer, 5th Military District, which appeared in *Commonwealth of Australia Gazette*, No. 102, of 24th December, 1914.

Frederick Augustus Hadley to be Officer Commanding No. 8 Australian General Hospital, and Staff Officer for Invalids, with temporary rank and pay of Lieutenant-Colonel, at the rate prescribed by Universal Training Regulation 160. Dated 4th August, 1915.

Honorary Captain W. J. Beveridge is transferred from Australian Army Medical Corps Reserve and to be Senior Medical Officer, Australian Imperial Force Camp, with temporary rank and pay of Major, at the rate prescribed by Universal Training Regulation 160. Dated 13th August, 1915. (This cancels the notification respecting this Officer which appeared in *Commonwealth of Australia Gazette*, No. 106, of 9th September, 1915.)

6th Military District.

Australian Army Medical Corps—

Captain (provisional) E. B. Moore to be Staff Officer for Invalids, Hobart (temporarily), with salary at rate of £150 per annum. Dated 9th August, 1915.

Captain (provisional) G. G. Thompson to be Staff Officer for Invalids, Launceston (temporarily), with salary at rate of £150 per annum. Dated 9th August, 1915.

The following additional reinforcements to the medical units have been published in the Commonwealth Military Orders:—

Reinforcements to No. 1 Australian General Hospital: Captains T. A. Grieves, A. R. Heupt, W. Evans, A. J. Macdonald, A. J. Molliston, S. M. Graham, C. H. Wesley, N. E. B. Kirkwood, C. K. Parkinson, E. K. Parry, C. J. Tozer, J. L. Niven, E. V. R. Huckell, J. G. Mackenzie, D. Bennett, S. B. Burge, E. W. Griffiths, E. C. East, F. L. Wall, K. N. Steele, W. M. Sinclair, E. A. Brummitt, V. McDowall, A. McKillop, W. A. Morton.

Reinforcements to No. 2 Australian General Hospital: Major C. A. Edwards; Captains H. Stoker (V.D.), J. B. Bell, A. H. Powell, S. C. Fitzpatrick, I. Blaubaum, J. H. Downing, R. S. G. Beard, C. T. Turner, C. P. W. Drying, W. J. Connolly, A. C. Smith, L. St. V. Welch, H. K. Grieve, H. Pern.

No. 1 Hospital Ship: Lieutenant-Colonel R. G. Craig, Majors W. A. Wood and B. Smeaton, Captains B. C. Kennedy, J. B. Lewis, J. H. Leon, G. S. Robinson, A. E. Colvin, W. H. Renwick, W. W. S. Johnston, D. G. Robertson.

No. 2 Hospital Ship: Lieutenant-Colonel A. B. Brockway, Majors J. A. G. Hamilton and D. H. E. Lines, Captains W. L. Kirkwood, D. D. Cade, W. Vickers, F. H. Sabiel, R. J. Taylor, A. S. Curtin, F. P. Edwards, B. Foster, J. S. Yule.

Convalescent Depôt, London: Lieutenant-Colonel J. F. Flashman, Majors E. B. Allen and A. E. Mills, Captains N. C. Shierlaw, J. J. Power, E. R. Mackay, J. T. Paton, E. H. Rutledge, D. D. Jamieson, Lieutenant W. K. Smith,

The following is the official list of members of the Federal Medical War Committee and the State Medical War Committees:—

(1) Federal Medical War Committee.

New South Wales—Dr. G. Armstrong, Macquarie Street, Sydney. Proxy: Dr. R. H. Todd, 30 Elizabeth Street, Sydney.

Victoria—Dr. Andrew Honman, Spring Street, Melbourne (Chairman).

Queensland—Dr. W. N. Robertson, Wickham Terrace, Brisbane. Proxy: Dr. Jeffreys Wood, Collins Street, Melbourne.

South Australia—Dr. J. C. Verco, North Terrace, Adelaide.

Western Australia—Dr. R. C. Merryweather, Perth. Proxy to be appointed.

Tasmania—Dr. R. G. Scott, Macquarie Street, Hobart. Proxy: Dr. A. L. Kenny, Collins Street, Melbourne.

(2) State Medical War Committees.

New South Wales—Dr. G. Armstrong, Macquarie Street, Sydney (Chairman); Dr. R. H. Todd, 30 Elizabeth Street, Sydney; Dr. W. H. Crago, "Craignish," Macquarie Street, Sydney.

Victoria—Dr. Andrew Honman, Spring Street, Melbourne (Chairman); Dr. A. L. Kenny, 13 Collins Street, Melbourne; Dr. R. L. McAdam, Alma Road, St. Kilda.

Queensland—Dr. W. N. Robertson, Wickham Terrace, Brisbane (Chairman); Dr. A. C. F. Halford, Clayfield, Brisbane; Hon. W. F. Taylor, M.D., Brisbane.

South Australia—Dr. J. C. Verco, North Terrace, Adelaide (Chairman); Dr. J. A. Bonnin, Hindmarsh; Dr. A. F. Lynch, South Terrace, Adelaide.

Western Australia—Dr. R. C. Merryweather, Perth (Chairman); Hon. Dr. A. J. H. Saw, M.L.C., Perth; Dr. H. J. Lotz, Fremantle.

Tasmania—Dr. R. G. Sprott, Macquarie Street, Hobart (Chairman), Dr. A. H. Clark, Macquarie Street, Hobart; Dr. G. E. Clemons, Launceston.

C. GAVAN DUFFY,
Secretary.

October 26, 1915.

A NAVAL COURT-MARTIAL.

Surgeon J. G. Skeet was tried by court-martial in Sydney on October 28, 1915, for desertion from his ship on October 19, 1915. Dr. Skeet on being asked whether he wished to plead or not, said that he would not plead.

Captain C. F. Henderson, Captain-in-Charge of the Naval Establishments at Sydney, conducted the prosecution. He detailed the events which led to the arrest of Dr. Skeet. He was under orders to go on board the *Penguin* on October 19. On the same day witness received a letter from Surgeon Skeet, informing him that he had sent in his resignation to the Secretary of the Navy Board. The reason given was that his wife was in a serious state of health. Captain Henderson received a message from the Navy Board, and thereupon sent for Surgeon Skeet and placed him under open arrest.

Lieutenant-Commander Graham deposed to having seen Surgeon Skeet on October 20, 1915. He ordered him to go on board the *Penguin* to receive orders, and intimated to him that he was under open arrest. Surgeon Skeet reported himself duly at 9 a.m. on the 20th. He had admitted that he had received orders from Captain Cumberledge to join the flotilla, and that he had not obeyed the order. He had stated that circumstances prevented him from obeying these orders. Subsequently Lieutenant-Commander Graham ordered Surgeon Skeet to report himself immediately on board his ship, and the order was obeyed. Another witness gave evidence to the fact that Surgeon Skeet had admitted that he had received orders to join the flotilla vessel before it sailed on October 19, 1915.

Two telegrams were produced in evidence. The first was from Surgeon Skeet to the Minister for the Navy at Melbourne, and contained the information that Surgeon Skeet's wife was seriously ill. The other was from the Navy Board to Dr. Skeet. The Board informed Dr. Skeet that his services were required and that he could not be spared,

Surgeon Skeet, who was represented by Mr. Mack, based his defence on the contention that he had been appointed for one year as a surgeon probationer in the Royal Seagoing Service, with permission to apply for confirmation of appointment to his commission. The period of probation started on August 17, 1914. He did not apply for confirmation of his appointment within the twelve months. He had sent in his resignation to the Navy Board before August 17, 1915. His appointment had not been confirmed. He held that since the period of probation had expired on August 17, 1915, he was no longer in the Naval Service, and, consequently, the Court had no jurisdiction.

The legal point was considered in private, and the Court found that under the provisions of the Commonwealth Defence Act and the Naval Discipline Act, no officer could resign during the state of war.

Surgeon Skeet stated in the witness box that three months before the twelve months' period of probation had expired, he wrote to the Minister, intimating that he wished to resign. He had received an official reply to the effect that he could not resign during the currency of the war. He had not received a commission. He maintained that he was not guilty of desertion. He saw Captain Henderson at about 11 a.m. on October 19, and at noon he handed him a letter, explaining that the state of his wife's health prevented him from sailing. He then went in search of a nurse, and, in the course of the afternoon, the destroyer flotilla sailed. He had reported himself later, without receiving any orders to do so. This act, he claimed, proved that he had no intention of deserting. Had he left on October 19 the result in regard to his wife's health would have been disastrous. Under cross-examination, he admitted that he had continued to perform his duties in the Navy. He had made several applications to be allowed to resign. He stated that His Excellency the Governor-General had intervened on his behalf on October 19, but that he had not been informed whether the intervention had been of any avail.

The President of the Court asked him whether he did not consider that his first duty was necessarily to his ship. In reply, Surgeon Skeet stated that he considered that his appointment had terminated on August 17, 1915. He had been on probation and could not continue further unless he was confirmed in rank. He admitted that he was doing duty at the time of the departure of the flotilla, and that under ordinary circumstances a naval officer could not remain behind unless he had permission from the Naval Board. He insisted that his appointment was a temporary one. The President asked him whether he had appreciated that as an officer in His Majesty's service his duty to that service was paramount. He replied that he considered himself a private practitioner since August 17, 1915.

Surgeon Skeet made a speech in his defence after the conclusion of the examination. He asked the Court to make full allowance for any shortcoming in the manner in which he had expressed himself during the examination by the members of the Court. He submitted that he had not been guilty of desertion. He had no intention of placing his domestic affairs before his naval duties, but, as was borne out by all his statements and by his letters, he had not regarded himself as a naval officer in the same sense as a captain or a lieutenant in the Navy, and that his obligations to the Navy had terminated on August 17, 1915.

Evidence was given to the effect that Surgeon Skeet possessed first-class reports from the Commanders of the *Berrima* and the *Penguin*, and from the Commander of the Royal Australian Naval College.

The Court considered the evidence, and found that Surgeon Skeet had been guilty of desertion. He was therefore sentenced to dismissal from His Majesty's service with disgrace.

Notice of appeal has been lodged. We understand that the question of the jurisdiction of the Court-Martial will be brought before the High Court.

Dr. E. S. Meyers, who has recently held the positions of Resident Medical Officer at the Brisbane Hospital and Resident Medical Officer at the Sydney Hospital, has entered into partnership with Dr. R. A. Meek, of Stanley Street, South Brisbane,

Abstracts from Current Medical Literature.

OPHTHALMOLOGY.

(161) Foreign Bodies in the Eye.

Brownlie reports a series of 55 cases of intra-ocular retention of foreign bodies. In each case the foreign body was composed of iron and magnetic alloys (*The Ophthalmoscope*, July, August, 1915). He emphasizes the importance of conducting the examination in a routine and systematic manner, under the following heads:—(*a*) Consideration of the history; (*b*) testing of the vision of both eyes; (*c*) external examination; (*d*) measuring the tension; (*e*) ophthalmoscopical examination; (*f*) radiological examination; and (*g*) the use of the electro-magnet. The signs under these headings are described in great detail. Radiological examination should never be omitted, and should be undertaken before examination with the electro-magnet. This is necessary for several reasons, but especially because there may be more than one foreign body present. In all the skiagrams taken the foreign body was missed only twice. Bexer's method was used in the majority of cases. The plate is fixed to the head on the injured side, and a 3-minutes' exposure is made. If this plate gives a doubtful result another may be taken, when the patient looks directly upwards during the first half of the exposure, and downwards during the second half. If the developed plate shows two foreign bodies it is in the eye, if only one then it is in the orbit. With the giant magnet it is not so important to locate the foreign body accurately, as when the small magnet alone is used. The Mackenzie Davidson localization requires much time and experience, and should be reserved for special doubtful cases. For extraction through the anterior chamber in recent cases, the pupil should be widely dilated with atropine, and anæsthesia with cocaine is preferable, as the patient can assist the operator. If enucleation may have to be resorted to a general anæsthetic should be given. It is advisable to have both a giant and a small magnet, the former being suspended from the ceiling, and the patient lying on the operating table. The giant magnet should have 5 points: (1) a large round point like a thimble, which is applied over the cornea, and is useful in drawing small pieces of metal from the vitreous into the anterior chamber; (2) and (3) long, narrow, blunt, and angled sharp points for insertion into the vitreous after scleral puncture; (4) and (5) angled blunt and angled sharp points for insertion into the anterior chamber. When the metal is in the anterior chamber, and perhaps embedded in the iris, magnetic force is much better than an attempt to grasp the body with the forceps. The wound may be enlarged if necessary, and covered by conjunctiva drawn over by a catgut purse-string suture after undermining at the limbus. When the metal was found embedded in the lens, the giant magnet with No. 1 point was applied over the cornea, and then the sharp point in the anterior chamber. In the cases in which this procedure proved unsuccessful an attempt was made a few days later, or after the lens had been extracted. When the metal is in the vitreous, and there is a recent wound in the sclera or ciliary region, an attempt should be made to draw the metal into the anterior chamber. If unsuccessful, it may be extracted through the wound. When the recent wound is corneal and the body is in the vitreous the giant magnet is most useful. Sclerotomy in corneal wounds should only be carried out if there are signs of anterior neuritis, or if the foreign body is far back and does not move with the external application of the magnet. It should also be performed after the foreign body has been in the vitreous for several days. The giant magnet has no effect on bodies behind the globe in the orbit, where indeed they do little harm.

(162) Choroidal Sclerosis.

Wood presents a case of choroidal sclerosis, an uncommon condition (*The Ophthalmoscope*, August, 1915). The patient, a woman, aged 46, suffering from irregular menstruation and menorrhagia, complained of straight edges appearing "zig-zag." No evidence of syphilis, glycosuria, or albuminuria. There was monocular diplopia. The vision of the right eye was $^6/_{24}$. Below and to the outer side of the disc there was a zigzag hæmorrhage. Two months later vision was reduced to fingers with eccentric fixation and sclerosed choroidal vessels near the disc could be seen. At the site of the hæmorrhage was a white line, and some crystalline bodies near. About a year later the left vision dropped to $^6/_{18}$; sclerotic vessels and a small irregular hæmorrhage were seen. Mercury, iodides, and diaphoresis were tried, but the only treatment that appeared to do any good was subconjunctival injection of cyanide of mercury. Primary choroidal sclerosis is rare, and is characterized by atrophy of the hexagonal epithelium and chorio-capillaris, the red fundus becomes browner in tint. The larger choroidal vessels stand out clearly, bounded by lateral streaks. Three varieties are described: Macular, mostly in old people; peri-papillary, the commonest form; and general sclerosis. There are frequently small hæmorrhages, and the disc is usually pale, but the retinæ are frequently unaffected. In the author's experience syphilis is not the cause. The patients are usually women in middle life; there is no sign of general arterio sclerosis, nor increased blood pressure. Some toxic substance in the blood is probably the cause. The prognosis as regards vision is grave, especially in general sclerosis of the choroid, and hæmorrhages add to the gravity of the condition.

(163) Protection Against Ultra Violet Rays.

Burge excised pig and ox lenses, and fitted them into floats of cork, and submerged them in vessels containing egg-white and blood serum, respectively (*Archives of Ophthalmology*, September, 1915). The lenses were then submitted to the rays from an electric furnace at 1000°C. from a distance of 15 cm. The preparations were exposed for as long as 100 hours without the production of an opacity in either the lens or media. When the furnace was 5 cm. from the preparations the lenses were rendered opaque in 10 minutes, but in this case the temperature in the region of the lens was about 80°C. Lenses arranged as before were submitted to the rays of a tungsten lamp of 2000 c.p. focussed upon them by a bi-convex glass lens In no case was opacity of the lens produced. When the sun's rays were focussed upon the lenses opacities could be produced in a few minutes, but the temperature of the lens was raised sufficiently high to coagulate its protein. Ultra-violet rays were then directed upon the lenses by enclosing them in quartz tubes, and bringing them to a distance of 5 cm. below a Cooper-Hewitt quartz mercury-vapour burner of 2500 c.p. Even after 100 hours no opacities were produced. Dryer and Hanssen have found that proteins are coagulated by ultra-violet radiation. Lens proteins seems to be an exception, which may be due to its fluorescence by means of which it absorbs the shorter waves, and radiates this absorbed energy in the form of longer waves. Fluorescent bacteria were found to be much less affected by ultra-violet radiation than the non-fluorescent. In cataractous lenses the amount of potassium is reduced, whereas the amounts of calcium, magnesium and sodium are much increased. Lenses immersed in these solutions and exposed as before to the electric furnace, tungsten lamp, and the sun, were unaffected with opacities, provided the effect due to rise of temperature was excluded. But when immersed in these solutions and exposed to ultra-violet radiation, opacities were produced. These same substances also decrease the fluorescence of the lens. Hence lens protein can be so modified by solution of the salts found in cataractous lenses and by dextrose that ultra-violet radiation can produce cataract. A provisional hypothesis is advanced that the resistance by the lens to ultra-violet rays is due to its fluorescence.

(164) Tincture of Iodine in Ophthalmology.

Stephenson has been using iodine for disinfecting the skin of the eyelids prior to operation (*The Ophthalmoscope*, July, 1915). He operated upon a man of 69 years for senile ectropion,

having previously painted the skin of the eyelids, side or the nose, and lower part of the forehead, with 3% tincture of iodine. Two days later the parts were swollen and red, as though the patient had erysipelas. In about a week the condition had disappeared. Rutherford has described three similar cases in 14,000 patients. Wessely reported staining of the cornea after injecting iodine for lachryenal fistula. The staining eventually disappeared.

LARYNGOLOGY AND OTOLOGY.

(165) Leucoplakia Buccalis et Lingualis.

Robert Levy (*Laryngscope*, August 1915) deals with the various aspects of leucoplakia of the mouth and tongue, basing his investigations primarily on a case of this nature. The patient was 63 years of age when first under observation. He did not smoke, and denied a syphilitic infection. The condition began with the appearance of bluish-white or yellowish-white plaques of irregular shape, with superficial excoriations at the margins. After having been under treatment for two years without any improvement, he consulted a surgeon, who found a nodular, spongy, indurated mass involving the alveolar process at the right angle of the jaw. The leucoplakia had extended considerably. A diagnosis of carcinoma was laid on the basis of microscopical examination, and the treatment employed was potassium iodide, and tonics taken internally, and local applications of the Paquelin cautery, and of potassium permanganate solutions. Later, the right half of the inferior maxilla was resected. The operation also involved the removal of the leucoplactic areas. The patient remained well for about three years, after which time a large papillomatous mass, at the right angle of the lower and upper lips, was discovered, on the surface of which there were thickened plaques of leucoplakia. The tumour was removed, and fulguration applied. The latter was discontinued on account of the pain produced. Levy analyses the literature in regard to the varieties, ætiology, manifestations and treatment of the condition. Considerable difference of opinion exists in regard to the association of leucoplakia with syphilis and tobacco. No one denies the development of malignant growth in connexion with this condition. Opinions however differ very considerably as to whether this development invariably occurs, whether it is a direct consequence of the leucoplakia, or whether it is a mere coincidence. In many cases, as in the one described, it is not always possible to rely on the diagnosis of malignancy from the clinical appearances, save when it appears as a syphilitic lesion, it may be regarded as a pathological entity. The results of treatment are unsatisfactory.

(166) Operations on the Labyrinth.

E. B. Dench publishes an analysis of the cases dealt with by him during the past 10 years of acute mastoiditis and secondary mastoiditis, as well as those of chronic middle ear suppuration, subjected to radical operation, with the view of determining the frequency of labyrinthine complications demanding operative treatment (*Laryngscope*, August, 1915). In addition he takes into consideration the case reports from the New York Eye and Ear Infirmary. Among the latter there were 17,726 cases of acute purulent otitis media, 18,659 cases of chronic purulent otitis media, and 9,613 cases of acute catarrhal otitis media during the 10 years. The total number of cases was therefore 45,998. During the period 45 operations on the labyrinth were performed. This is equivalent to 0.1%. His own cases numbered 659 acute mastoiditis, 533 chronic middle-ear suppuration, 23 cases of brain abscess, 33 of meningitis, and 37 of sinus thrombosis. During the eight years from 1907 he performed an operation on the labyrinth 22 times. In 10 cases a partial operation was performed, by which he means removal of a portion of the labyrinth, and in 12 a complete operation was performed. In this case the horizontal semi-circular canal, the vestibule, and the cochlea are freely opened, and drainage is established. The figures show that labyrinthine involvement is a less frequent complication of middle-ear suppuration than brain abscess, and may be less frequent even than meningitis. The complete operation is not often required, and should be undertaken only when very definite symptoms are present, pointing to either acute labyrinthine involvement, or an acute exacerbation of a previous labyrinthine suppuration.

(167) External Operation for Frontal Sinus.

Killian's bridge method for operating upon the frontal sinus may be regarded as meeting all the requirements of a radical operation. The disadvantages, however, of this operation consist in the permanent effects or disfigurement produced, and in the setting up of neuroses. R. H. Skillern (*Journal Laryn. Rhin. and Otology*, September, 1915) has examined the subject, and sets himself the task of determining what form of external radical operation should be advocated. Indications may be absolute or relative. The absolute indication consists in the progress of disease threatening the neighbouring organs, or even life itself. Among the relative indications he mentions, the presence of subjective symptoms of sufficient severity to interfere with the occupation of the patient, when severe exacerbations occur, when abscesses or fistulæ exist when headache continues without any apparent change in the amount or consistency of the secretion, when the pus continues to be fœtid, and when a large sinus exists and the disease does not appear to yield to internal treatment. After giving a brief review of the pathology and course of sinus suppuration, he arrives at the conclusion that a modification of Jansen's operation yields the best results. The object in view is to save the anterior wall, and to obtain free access to the sinus through the superior internal portion of the margin of the orbit, and the floor of the sinus. The diseased mucosa, ethmoid cells, and if necessary the sphenoidal cells are removed, and the communications with the nose enlarged as far as necessary by the removal of pieces of the orbital plate. This operation does not lead to deformities like the Killian operation, but the author points out that the maxim that the whole diseased area must be eradicated at all costs cannot be departed from.

(168) Herpes Zoster Oticus, Combined with Recurrent Laryngeal Paralysis.

Dan McKenzie points out that geniculate or otic herpes is by no means uncommon, but that its combination with recurrent laryngeal paralysis has not yet been described. On theoretical grounds it should not be infrequent (*Journal Laryn. Rhin. and Otology*, September, 1915). His patient was a man aged 30 years of age, who gave the history of slight headache in the right frontal region, of three weeks' duration. Pain in the ear began a week before admission. Deafness was present. The auricle was red and swollen, and in the fossa of the helix there was a large bleb, the result of the confluence of several individual vesicles. Three clusters of vesicles were seen in the scalp above the right ear. The external auditory meatus was filled with débris. The presence of blood-stained serum indicated that the eruption had affected the wall of the meatus. There were some traces of a vesicular eruption on the face, and in the buccal cavity as well as in the fauces. In the larynx there were a few unruptured vesicles on the epiglottis. On the upper edge of the right ary-epiglottic fold, and on the arytænoid eminence. Facial paralysis was complete on the right side, and the right vocal cord was also affected. The patient was acutely ill at first. As he recovered the symptoms gradually cleared up, but the facial paralysis persisted. Three days after admission a well-marked vestibular storm took place. There was severe vertigo and nausea, and later vomiting. Slight lymphocytosis of the cerebro-spinal fluid. The fluid yielded a negative Wassermann reaction. McKenzie finds difficulty in explaining the involvement of the pure motor nerves in a condition which apparently attacked the posterior root ganglia only. He assumes that the neuritis in the nerve trunks adjoining the affected ganglia may spread to involve other nerves which communicate with the nerve ganglion and trunks primarily affected.

British Medical Association News.

SCIENTIFIC.

A meeting of the Victorian Branch was held at the Medical Society Hall, East Melbourne, on October 6, 1915, Dr. Andrew Honman (the President) in the chair. There was a large attendance.

Dr. C. Alwyn Stewart, Medical Superintendent of the Alfred Hospital, read a paper on "Cerebro-spinal Meningitis." The text of the paper will be found on page 435 of this issue.

Dr. N. H. Fairley and Dr. J. V. Guest read a paper on "Cerebro-Spinal Fever: An Analysis of Fifty Cases." This paper has been published in the issue of *The Medical Journal of Australia*, of October 23, 1915, p. 383.

Dr. N. J. Bullen, Resident Medical Officer at the Children's Hospital, Melbourne, read a paper on "Epidemic Cerebro-Spinal Meningitis." The text of this paper will be found on page 438 of this issue.

Dr. Reginald Webster, Clinical Pathologist at the Children's Hospital, read a paper on the "Pathology and Bacteriology of Epidemic Cerebro-Spinal Meningitis." The text of this paper will be found on page 440 of this issue.

Dr. A. V. M. Anderson opened the discussion. He pointed out that it was too early to take complete stock of the epidemic. The statistics of the cases up to date could not be prepared for some time to come. He expressed the hope that a further discussion could be held when these statistics were available.

Before entering on the subject of discussion, he made a graceful reference to the late Dr. Leonard Wright, a member of the staff of the Base Hospital. Dr. Wright had worked extremely hard, looking after the patients who were suffering from meningitis. In the early days of the epidemic the condition under which he laboured had been very unfavourable; he had unfortunately contracted the disease and had succumbed to it. Dr. A. Langley, of Ballarat, was another victim of the regrettable associations of warfare. He considered that both were as much deserving high honours as any soldier who died on the field of battle. The profession was under a deep debt of gratitude to a number of men and women who had worked under the disadvantageous conditions. He referred to the medical men, nurses and orderlies in the wards in which the meningitis patients were under treatment.

The epidemic was not yet over, and the cases were still severe. During the past week, several fulminating cases had been admitted to the Alfred Hospital. He feared that the epidemic would recur next winter.

In dealing with the condition itself, he pointed out that cerebro-spinal fever was a blood infection, and that in many cases no meningitic symptoms developed. In these cases retraction of the head and Kernig's sign were absent. The disease was a febrile condition which had been described as rhino-pharangitis, with occasional meningitic development. The infection was spread by carriers, who were twenty times as numerous as those suffering from the disease.

In regard to symptoms, Dr. Anderson considered headache, vomiting, and a petechial rash as the most significant. The rash had been very common during the early part of the epidemic. He raised the question whether the epidemic was a severe one. It was impossible to form an opinion at present, but, judging from the number of deaths and the proportion of patients with petechial rashes, it would appear to be severe.

The staff of the Alfred Hospital was much indebted to Dr. C. Alwyn Stewart, who had volunteered to look after the patients, and also to Dr. O'Day, the Senior Resident.

The cases could be divided into acute, fulminating, and chronic. He advocated the use of Flexner's serum, injected either hypodermically, intravenously, or intrathecally in the early stages of the fulminant cases. It was not necessary to give up hope in any chronic case, no matter how badly the patient was doing. Patients who had been comataose for days had eventually made good recoveries in some cases. There was a patient aged 47 years in the Alfred Hospital at present, whose pulse-rate had been 180 for three days in succession. He was now doing well, his pulse-rate had fallen to 150, and it was possible that he might recover.

Rigors often occurred late, without any sign of septic infection, save in the meninges. The rigors resembled those of enteric fever. They were comparatively frequent in meningitis, and did not require any special treatment.

Dr. Anderson called attention to the urgent necessity for the provision of accommodation for persons suffering from meningitis in properly equipped hospitals. The patients should be sent to the infectious diseases hospital. This hospital should admit patients suffering from all infectious diseases, and proper wards should be established for every form of epidemic disease. Cerebro-spinal fever required proper nursing, and various aseptic surgical procedures had to be carried out from time to time. It was therefore essential that the treatment should be carried out in a properly equipped hospital.

Before anti-meningococcic serum was available, normal horse serum had been injected hypodermically, and into the spinal theca. This treatment had been suggested by the physicians at the Children's Hospital. The patients had done comparatively well after this treatment. Urinary symptoms had followed the use of urotropine in a few cases. There had been very little pyelitis.

The serum had been used both in the early stages and at a later date, especially in cases when the serum had not been available during the early stage. He was of opinion that in some of the cases the result of treatment with Flexner's serum had been good. At times it did not seem to exercise the beneficial effect at first. He had come to the conclusion that it should be used, even in the late stages of the disease.

In regard to mortality, he pointed out that before the complete statistics could be set up, it would be necessary to add the number of the patients who had died at the Base Hospital to those who had died at the Alfred Hospital.

Turning to the question of the treatment by drugs of prolonged cases, he stated that good results had been obtained in the late stages of the disease by the use of iodides. Mercury had also been given as an absorbent. These drugs were worth applying for a considerable time. He had found 5 grains of quinine given four times a day of use when there was continuous night rise of temperature.

In conclusion, Dr. Anderson hoped that the discussion would result in the offering of numerous suggestions in regard to prevention and treatment, and that the knowledge of the disease would be increased by it, so that, should the epidemic recur, they would not be unprepared.

Dr. A. N. McArthur moved the adjournment of the discussion. The motion was seconded by Dr. W. R. Boyd, and the discussion was consequently adjourned till October 20, 1915.

The report of the discussion which took place at the adjourned meeting had not reached Sydney at the time of going to press.

MEDICO-POLITICAL.

A meeting of the New South Wales Branch was held on October 29, 1915, at the B.M.A. Building, 30-34 Elizabeth Street, Sydney, Dr. George Armstrong, the President, in the chair.

Dr. A. A. Palmer asked the Chairman for permission as a matter of privilege to deal with a leading article which had appeared in *The Medical Journal of Australia* of October 23, 1915.

The Chairman ruled that the subject could be discussed as a matter of urgency.

Dr. Palmer thereupon drew the attention of the members to the contents of a leading article headed "Medical Registration," dealing with the Medical Practitioners Amendment Bill, and proposed the following motion:—

> That this meeting of the New South Wales Branch of the British Medical Association disapproves of a leading article appearing in *The Medical Journal of Australia* of October 23, 1915, entitled "Medical Registration," and trusts that in future the policy of the journal will be under better control and in conformity with the expressed wishes of the Council and the medical profession.

Dr. E. H. Binney seconded the motion,

Dr. W. F. Litchfield asked the Chairman whether the motion was in order.

Dr. Luker suggested that the policy of the Council in regard to the subject under discussion should be stated.

The Chairman ruled that the motion was in order.

Dr. R. H. Todd, the Honorary Secretary of the Branch, replied to a number of questions referred to by Dr. Palmer.

Dr. Andrew Davidson appealed to Dr. Palmer to delete the second portion of his motion.

Dr. Palmer accepted the suggestion, and with the leave of the seconder and of the meeting amended the motion to read as follows:—

> That this meeting of the New South Wales Branch of the British Medical Association disapproves of the leading article appearing in *The Medical Journal of Australia* of October 23, 1915, entitled "Medical Registration," and reaffirms the principle of reciprocity.

The motion was carried *nemine contradicente*.

The Chairman suggested that the communications which had been announced on the business paper for the evening be read on November 12, 1915, on account of the lateness of the hour. The suggestion was adopted.

Dr. F. Guy Griffiths moved:—

> That the President be requested at his discretion to wait upon the Minister in charge of the Bill and put the views of the meeting before him.

The motion was seconded by Dr. Windeyer and carried.

We have been requested by the Council of the Victorian Branch to publish the following abstract from a letter addressed by the Deputy Director-General of Medical Services to the Honorary Secretaries of the various Branches of the Association, and dated October 25, 1915:—

> It is now provided that no "sick leave" is to be granted from any Military Camp. All men who fall sick in camp will be treated in Military Hospitals, and not allowed to go to their homes for treatment.
>
> Where a man, who is at home on leave, falls sick, he is at once to report (if able) at the nearest Military Hospital for admission and treatment. If unfit to travel he will be treated at his own expense, and no liability for medical expenses will be recognized by the Department.
>
> Any such man must inform his Officer Commanding within 48 hours of his illness. A certificate from his own medical practitioner will not necessarily be accepted as a warrant for extension of leave. The Department reserves the right to send a Military Medical Officer to examine and report in each case. Any man failing to report his illness will be treated as absent without leave.
>
> Medical practitioners are requested to assist the Department in keeping in touch with all sick cases by notifying the Staff Officer for Invalids at District Headquarters of all cases of illness among men absent on leave that may come under their notice.

Medical Matters in Parliament.

(*Continued from page* 432).

NEW SOUTH WALES.

Further consideration was given to the Council's amendments on October 19, 1915, the Assembly sitting in Committee.

On the motion of the Minister in charge of the Bill, the Committee agreed to the Council's amendment as to the insertion of the words "licentiate of the Society" instead of "member of the Company."

In regard to the second amendment, the Minister stated that he found that, under the proposed clause, an Australian who did not take a degree here, but obtained one at a European University, would be debarred from practice in the State. He had also found that the clause would prevent any graduates but those from the United Kingdom from engaging in practice here. Even the graduates from Canada and the United States would not be admitted. The Leader of the Opposition had communicated with him, and suggested an amendment which would meet the difficulty. The amendment would provide that persons be admitted to practise on passing an examination prescribed by the University of Sydney.

Mr. C. G. Wade then moved that the Legislative Council's amendment be amended by the addition of the following words "or in the absence of such proof, unless he passes the examination prescribed by the University of Sydney." If this amendment was passed, the position would be this: If there was reciprocity existing between the country whence the applicant came and New South Wales he became entitled to practise without further conditions: but if there was no reciprocity between the two countries, he must go through some test of education, capacity and skill, before he was allowed to practise in the State. The amendment would help their men who graduated in France and other countries, and would safeguard the public against incompetent men being admitted to practise.

Mr. McGowen could not support the amendment. He thought that it would place obstacles in the way of sick persons obtaining the best possible treatment. They should hesitate to hand over to a conservative body like the Senate of the University of Sydney the power to subject medical men from foreign countries to an educational test.

Mr. Levy said that the amendment was designed to cover those people who had degrees from universities which did not grant any recognition of our degrees. The Leader of the Opposition did not want to shut the door to them, since, by doing so, they might be excluding from service to humanity in this part of the world some of the greatest medical men in the universe. In the case of such a man, there could be no possibility of excluding him from practice, because the Medical School or Board would prescribe some kind of examination that he could easily pass. The amendment might well be accepted, for it was an ingenious way of getting over what was otherwise a serious difficulty.

Dr. Arthur stated that when the medical profession was concerned in a question before the House, a great deal of sentiment was imported into the discussion. If a similar state of affairs was suggested in regard to other members of the community, the House would not hesitate for a moment to claim that, if an Australian were not allowed to carry on his avocation in any country, they would not submit to the indignity of receiving the subjects of that country here without any reciprocity. It was a slight upon the Australian graduates and upon those doctors coming from Great Britain to presume that they had to look abroad for the brilliant men who could bring relief to suffering humanity in this community. If they did not establish this system of reciprocity they would have a flood of German and Austrian medical practitioners into this State in the course of a few years after the war. They would present themselves here and say that they were not Germans or Austrians, but that they were Danes, Swedes or Dutchmen. They would, in all probability, change their names after they had been in the State a short time, and pass into practice in that way. It was very improbable that any Australian graduate would want to practise in foreign countries, but a large number of graduates of these countries would be glad to come here.

Mr. Edden said that he was not sure it would not be a good thing for the community if there was a dearth of doctors. In his youth, when he was ill, it was a matter of taking a dose of senna. When he went to the old doctor he received a draught of something black that made him well. Nowadays, with so many doctors falling over one another, they cost the people thousands of pounds. If people would study the remedies of old women, like a drop of senna, a pennyworth of linseed and a stick of liquorice, it would be better. Now they went to the doctor and paid him an exorbitant price. He would vote against the amendment.

Mr. E. V. Robson would vote against both amendments. He did not believe that there was any real necessity to prevent the few foreign men who came to Australia from doing so.

Mr. Carmichael was also opposed to both amendments. He thought these amendments should have been the subject of a separate Bill. When the Minister introduced this Bill he assured the House that it was a war measure to

assist in increasing the supply of doctors to the Imperial Government. The Legislative Council had attempted to graft on that urgent measure an amendment to make the close corporation which existed at the present time still closer. Because they had an antipathy to the Germans at the present time, and rightly so, Dr. Arthur suggested that the doctors who would be admitted would be German doctors. By the miserable pretext which he advanced, by raising the German question, in order to make a still closer corporation, it was sought to shut out the skilful doctors and able scientists of the Latin and Russian races. Mr. Carmichael then discussed the advisability of employing the examination test. He thought that even if allowance were made by the Medical School in regard to the standard of the examination, that men would find difficulty in regaining the power to pass examinations. He was also impressed with the difficulty to a foreigner of writing an examination paper in English.

Captain Toombs welcomed the conversion of Dr. Arthur to the principle of preference to unionists. He was delighted to know that the honourable member not only believed in preference to unionists, but would steadfastly seek to have it applied to the union of which he was a member. He had put up a great fight for the medical profession, which was going to be swamped and overcrowded. It was going to suffer from unfair competition, owing to a great influx of members from other countries.

Dr. Arthur interjected that he had said nothing of the sort.

Captain Toombs continued that the honourable member was a member of a body which believed in opening every avenue of the industrial market except the medical profession. The honourable member believed in importing anything and everything in the way of labour, no matter what the work was, so long as it was not his work. Captain Toombs was proceeding to discuss the hon. member's connexion with the Immigration League when he was called to order by the Temporary Chairman, Mr. Durack, who ruled this discussion to be out of order. On Captain Toombs persisting, the Chairman ordered him to confine his remarks to the question. Captain Toombs moved to dissent from the Chairman's ruling. The Chairman put the motion for dissent, which was lost by 31 to 20 votes.

Captain Toombs pointed out at considerable length that he was in favour of protecting Australian professional men and all other men as well. The members of the British Medical Association, as good trades unionists, were doing everything they could to make their positions secure, and he was out to help other unionists to make their positions secure.

Mr. Cochran said that the Bill had been introduced as a war measure. They had been told that a number of men were willing to go to the front, but could not go, owing to the difficulty of filling their places. It was stated that, if the Bill were passed, more men would be available for the front and for the vacant positions. It now appeared that the Bill was introduced under false pretences. The object of the measure was to prevent a number of highly qualified practitioners from coming here and being registered by the Medical Board. He had been prepared to support the proposal to reduce the number of years required to qualify for the profession. He was still prepared to support this Bill as a war measure, but he was not going to give his vote in support of a measure to restrict the liberty of any person, no matter from what land he came nor where he qualified for his profession. Any qualified man should be allowed to practice his profession in this country, unless he was a German.

Mr. Gardiner was opposed to the amendments. The Committee had been misled.

Mr. Griffith pointed out that the character of the Bill had been altered in another place.

Mr. Gardiner disclaimed any intention of suggesting that the Minister had misled members. The Government had no right to accept the amendment of the Council. The medical profession had taken advantage of this measure to protect themselves, and were seeking to induce Parliament to give them protection against competition. No other trade or profession in the community had this protection.

Mr. Lang stated that the Minister had informed the Committee that any Australian who obtained a degree in a foreign country would be debarred from practice in the State. That confirmed him in his opposition to the clause. According to Dr. Arthur, the University would be quite satisfied to allow doctors, who could only earn £100 per year in their own country, to practice here and earn £1,000 a year, if only the same rights were given to qualified men of the Sydney University to practise in countries where they could earn £100 per year. If there were any man who would leave Australia to practise in a continental country there must be a surplus of men here, or the pay here was very poor. As a matter of fact, it was desired that continental doctors should not come here, as it was feared that they might break down the Chinese wall which surrounded the members of the British Medical Association. Since many highly qualified men might come here a Chinese wall was required by the profession. He supported the Bill, apart from the amendment.

Mr. Osborne thought that much of the discussion was beside the mark. The clause that provoked all the discussion provided for one thing only, reciprocity. There was nothing in the Bill to suggest that it was drafted with the idea of preventing medical men from coming here. He thought that the reason for the clause was particularly clear. In Australia there was a standard in medicine, which they believed ought to be recognized by the rest of the world. Australians who passed here with the highest honours and went to other parts of the world were not accepted as qualified men. All that the Bill proposed was to give preference to Australians and the men from the Mother Land and to test the qualifications of those from other lands. He would support the amendment.

Mr. Bagnall had much sympathy with the desire of the medical profession for reciprocity with medical men in other parts of the world. He thought that they were entitled to achieve their desire. He intended, however, to vote against the amendments, as he thought that the present measure was not the proper place to acquire the desired result. He thought that negotiations should be opened by the Government with those countries in which Australian doctors were not recognized.

Dr. Arthur desired to foreshadow a further amendment, in order not to be deprived of his right to move it when the amendment moved by the Leader of the Opposition was disposed of. He intended to move for the insertion of words that would provide that any person who was a graduate of a German or Austrian university or college should come under the proviso of exclusion.

The Temporary Chairman stated that the hon. member would be quite in order in moving the amendment, after the amendment before the Committee was disposed of.

Mr. D. Storey, Mr. Kearsley and Mr. Haynes spoke in favour of the amendments, on the ground that they would assist in gaining the recognition of our graduates by foreign countries.

At this stage Mr. Wade submitted a point to the Chairman. The amendment of the Council, his own amendment and the amendment foreshadowed by Dr. Arthur were before the Committee. As far as could be judged from the debate, the amendment by the Council and the amendment by himself would be lost, but the amendment by Dr. Arthur might gain the support of the Committee. If the last named amendment were not put first and the other amendments were defeated, then the further amendment could not be moved.

Mr. Cann suggested that Dr. Arthur's amendment form a new clause.

The Temporary Chairman, Mr. Durack, said that it would be competent for Dr. Arthur to move his amendment when Mr. Wade's amendment was disposed of.

Mr. Griffith said that the ruling disposed of the difficulty of moving the amendment, but it left another difficulty. Members might support Dr. Arthur's amendment but not the Council's amendment. As Dr. Arthur's amendment was attached to the Council's amendment, if that were rejected the exclusion of Germans would not be ac-

complished. If the amendment of the Leader of the Opposition was carried, it would be evident the Committee were desirous of accepting the Council's amendment. If the amendment of the Leader of the Opposition was rejected, it would be known that the Committee was desirous of rejecting the proposal to exclude medical men from friendly nations. In that case he would like some member to move a further amendment: "Provided that no person shall be deemed to be a legally qualified practitioner or entitled to registration as such under the provisions of sub-section 1 (*b*) of this section by virtue of a diploma, degree or license granted by any German or Austrian university or medical school."

Mr. Cann pointed out that this course would not be possible, as it would mean going back on the clauses already dealt with in Committee.

The Temporary Chairman said he thought that he should make it clear that the course proposed by the Minister was impossible under the Standing Orders. He could only move his amendment if the amendment of the Leader of the Opposition was withdrawn.

Mr. J. H. Cann said that many members were desirous of rejecting the amendment of the Council and the amendment of the Leader of the Opposition, but desirous of supporting the amendment suggested by Dr. Arthur. He thought that that amendment should form a new clause.

Mr. Cocks asked whether the amendment were designed to exclude people who at the present time were permitted to practise in New South Wales.

Mr. Cann said the clause was not retrospective.

The Chairman said that to do this the amendment by the Council must be formally negatived.

Dr. Arthur said that he would support the contention of Mr. Cann. If there were not a new clause his amendment might be carried and then lost when it was attached to the Council's amendment.

The Chairman ruled that Dr. Arthur could move his amendment, whatever might be the fate of that of the Leader of the Opposition.

Mr. T. Brown thought that these amendments should be in a separate Bill.

Dr. Arthur said that it was unlikely that a separate Bill would be introduced.

Mr. Lang started to discuss a point in reference to foreigners applying for registration in England, and, after registration, coming to New South Wales.

Mr. Fitzpatrick raised a point of order that matters precedent to Mr. Wade's amendment could not be discussed.

Mr. Wade's amendment was then put and carried by 29 votes to 24.

The voting was as follows:—

Ayes.	
Arthur, Dr. R.	Lee, C. A.
Burgess, G. A.	Levy, D.
Cann, G.	McGarry, P.
Cann, J. H.	Mercer, J. B.
Cocks, A. A. C.	Morton, Mark F.
Colquhoun, P. B.	Nesbitt, G.
Fitzpatrick, J. C. L.	Osborne, J. P.
Griffith, Arthur	Richards, G. A.
Grimm, A. H.	Storey, D.
Henley, T.	Storey, J.
Hoskins, T. J.	Thomas, F. J.
Hunt, J. C.	Wade, C. G.
Kearsley, W.	*Tellers,*
Lane, H. W.	Ball, R. T.
Latimer, W. F.	Haynes, J.
Noes.	
Arkins, J. G. D.	Lang, J. T.
Ashford, W. G.	McGirr, J. J. G.
Bagnall, W. R. C.	Miller, G. T. C.
Black, G.	Minahan, P. J.
Boston, W. J.	Robson, W. E. V.
Brown, T.	Scobie, R.
Carmichael, A. C.	Stuart-Robertson, R. J.
Cochran, J. P.	Toombs, Capt. S.
Crawford, T. S.	Wright, J.
Dooley, J.	*Tellers,*
Durack, E.	Cusack, J. J.
Fingleton, J.	Hickey, S.
Gardiner, A. R.	

Dr. Arthur asked if he should move at this stage.

Mr. Griffith said that he would propose that they deal with the Council's amendment, and, after a decision was reached, a new clause could be attached.

The Chairman, however, ruled that if Dr. Arthur did not move at this stage there would be no further opportunity to do so.

Dr. Arthur then moved:—

> "That the Council's amendment be further amended by adding the following words "or if he be a graduate of any German or Austrian university or medical school, or a German or Austrian subject."

Mr. Wright opposed the amendment. He thought that people were apt to go mad and not to consider what they were doing. The Minister would be well advised to put the Bill under the table and go on with legislation that would be of some use.

Mr. McGirr and Mr. Carmichael also opposed the amendment, on the ground that nationality should not be considered in a profession dealing with human suffering.

Mr. T. S. Crawford would vote for the amendment as a protest against the barbarity of German scientists, who had made war horrible. He thought the House might go out of its way to show its disgust of the uses to which scientists had put their knowledge. He would have, however, to vote against the clause when the Council's amendment was put.

The amendment was then agreed to.

The Committee then divided on the Council's amendment, which was then carried, as amended, by 27 votes to 21.

The resolutions were then reported and the report adopted.

On October 20, 1915, on the motion of Mr. Arthur Griffith, the following message was sent to the Legislative Council:

> Mr. President,—
>
> The Legislative Assembly having had under consideration the Legislative Councils' message, dated 13th instant, requesting its concurrence in certain amendments made by the Council in the Medical Practitioners (Amendment) Bill,—
>
> Agrees to the amendment on page 2, which adds a proviso at end of clause 2, but proposes to amend such proviso by the addition thereto of the following words: "or in the absence of such proof unless he passes the examination prescribed by the Senate of the University of Sydney, or if he be a graduate of any German or Austrian university or medical school, or a German or Austrian subject,"— in which amendment the Assembly requests the concurrence of the Legislative Council.
>
> Agrees to the other amendment made by the Council in the Bill.
>
> R. D. MEAGHER,
> Speaker.
>
> Legislative Assembly Chamber,
> Sydney, 20th October, 1915.

(To be Continued.)

Correspondence.

OPERATION FOR VARICOCELE AS A MILITARY REQUIREMENT.

Sir,—I read with interest the letter of Dr. R. Scott Skirving, re operation for varicocele as a military requirement, in your issue of July 31, 1915. The answer is that if a man has a varicocele he can easily say he is suffering dragging pains which prevents him doing his duty, and thus become a burden. I had a case recently of an Imperial soldier who had a varicocele, and was able to do his work as long as he had a suspender, but when this was lost he could not replace it, and had to be sent here for operation, as he was suffering to such an extent that he was unable to go on.

In my opinion it is better to operate on these cases under the most favourable conditions, before they come to the front, and anticipate their being a burden on the hospital accommodation. Perhaps not the lesser danger it removes a reason for malingering, which is a thing not

unknown, particularly when a man is put on heavy duty which does not suit his taste.

Yours, etc.,
CLARENCE READ, A.M.C., Major.
No. 3 Australian General Hospital,
Mudros West, Lemnos,
September 20, 1915.

THE PROBLEM OF THE MIDWIFE.

Sir,—I would be glad of your advice or that of a senior member:—An elderly untrained midwifery nurse two years ago was refused a license for her cottage as a Private Hospital. The police strongly advised against the granting to her of such license. Lately she has been given a license. I tried at one time to give her some simple teaching in midwifery, but found that she was unable to learn. I could not get her to follow even simple directions, and I have had serious trouble over some of her self-conducted cases. This old lady does not believe in antiseptics. I could not even induce her to purchase a bottle of lysol. I have it on the best authority that she is dirty in her home. What I want to know is this: If I am sent for to attend midwifery cases at her house ought I to decline? In my thirty-seven years' practice of obstetrics I have never had a case of puerperal sepsis. I am nervous re above.

Yours, etc.,
HIBERNIAN.

["Hibernian" is under no legal obligation to attend patients in the hospital referred to. The question of a moral obligation is one which must be decided by the doctor himself. It is probable that the Medical Inspector of Private Hospitals will take cognisance of the conditions obtaining in this hospital in the course of his work of inspection. The Medical Inspector of Private Hospitals is an officer under the Director-General of Public Health, and would report any unsatisfactory condition to the Department.]

Proceedings of the Australasian Medical Boards.

NEW SOUTH WALES.

The following have been registered under the provisions of the "Medical Act of 1912" as duly qualified medical practitioners:—

Byrne, Kevin, M.B., M.S., 1915, Univ. Sydney.
Grieve, Percy Neil, M.B., 1915, Univ. Sydney.
Loubet, Paul Rene, M.D., 1914, Univ. Paris.
O'Regan, Stanley Vincent, M.B., 1915, Univ. Sydney.
Tooth, Henry Laurence, M.B., 1915, Univ. Sydney.
Langan, Alfred Meillon, M.B., 1915, Univ. Sydney.

Births, Marriages, and Deaths.

The charge for inserting advertisements of Births, Marriages and Deaths is 5s., which sum should be forwarded in money orders or stamps with the notice, not later than the first post on Tuesday morning, in order to ensure insertion in the current issue.

BIRTH.

WEST.—On October 19, 1915, at "Macaria," Camden, New South Wales, the wife of F. W. West, M.B., Ch.M.—a daughter.

Diary for the Month.

Nov. 8.—South Australian Branch, Council.
Nov. 9.—Tasmania Branch, B.M.A., Monthly and Council.
Nov. 10.—Victorian Branch, B.M.A., Monthly.
Nov. 10.—Melbourne Pediatric Society.
Nov. 10.—Victorian Branch, B.M.A., latest date for Nominations of Officers.
Nov. 11.—Victorian Branch, B.M.A., Council.
Nov. 12.—N.S.W. Branch, B.M.A., Ordinary.
Nov. 16.—N.S.W. Branch, B.M.A., Executive and Finance Committee, Ethics Committee.
Nov. 17.—Western Australian Branch, B.M.A., Monthly.
Nov. 19.—Queensland Branch, B.M.A., Council.
Nov. 24.—Victorian Branch, B.M.A., Council.
Nov. 24.—Victoria Branch, B.M.A., Ballot Papers issued for Election of Officers.
Nov. 25.—South Australian Branch, B.M.A., Monthly.
Nov. 26.—Melbourne Hospital Clinical Society.
Nov. 26.—N.S.W Branch, B.M.A., Ordinary.
Nov. 30.—Victorian Branch, B.M.A., Eye and Ear Section.
Nov. 30.—N.S.W. Branch, B.M.A., Organization and Science Committee, Medical Politics Committee.
Dec. 1.—Victorian Branch, B.M.A., Annual General Meeting.

Important Notice.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C.

Branch.	APPOINTMENTS.
QUEENSLAND. (Hon. Sec. B.M.A. Building, Adelaide Street, Brisbane).	Brisbane United F.S. Institute.
WESTERN AUSTRALIA. (Hon. Sec. 230 St. George's Terrace, Perth).	Swan District Medical Officer. All Contract Practice Appointments in W.A.
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